Serviceanweisung
Service manual

Ident-Nr. 2783200
2783300
2786300
2786200

CV 90–4
CV 90–5

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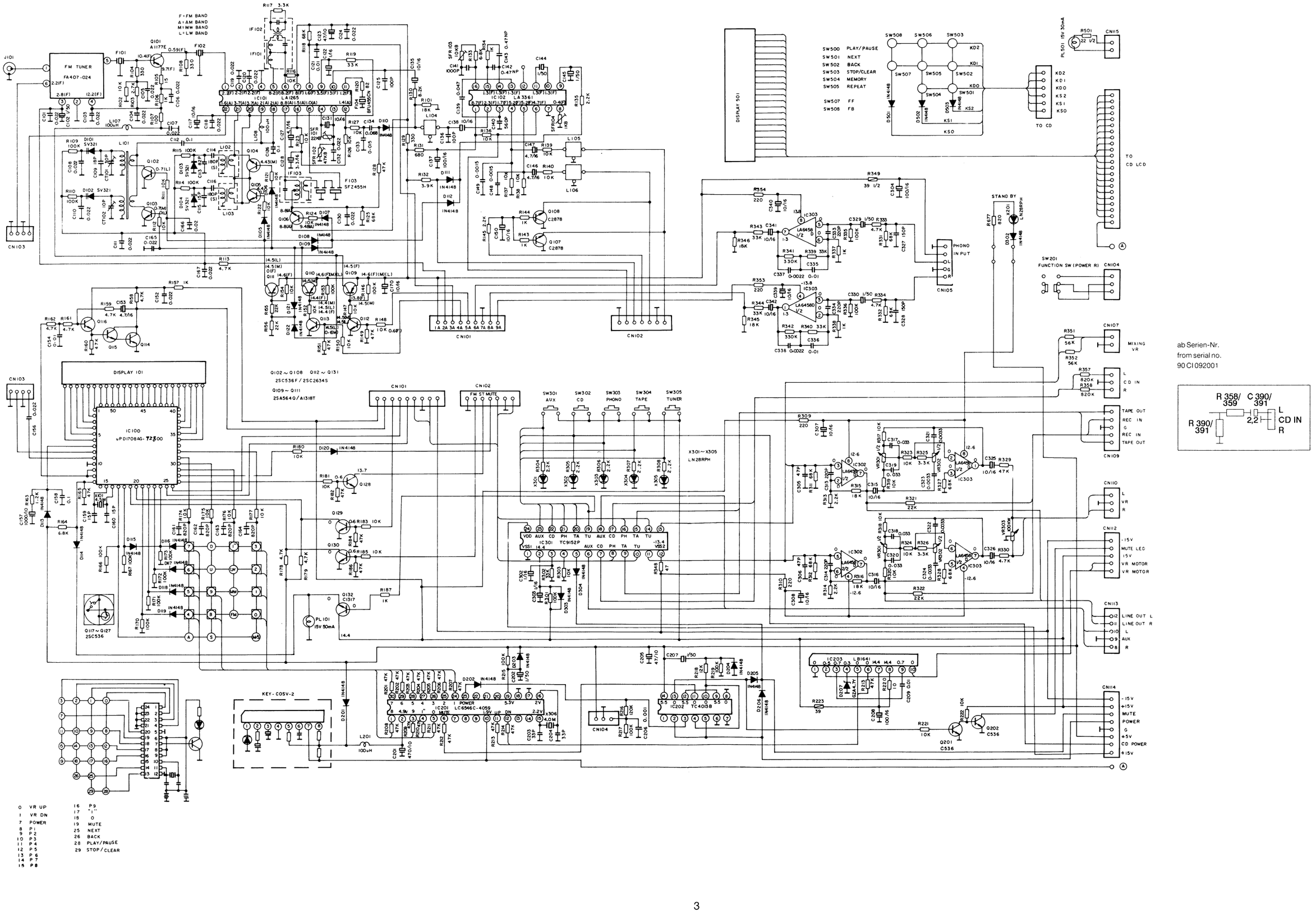
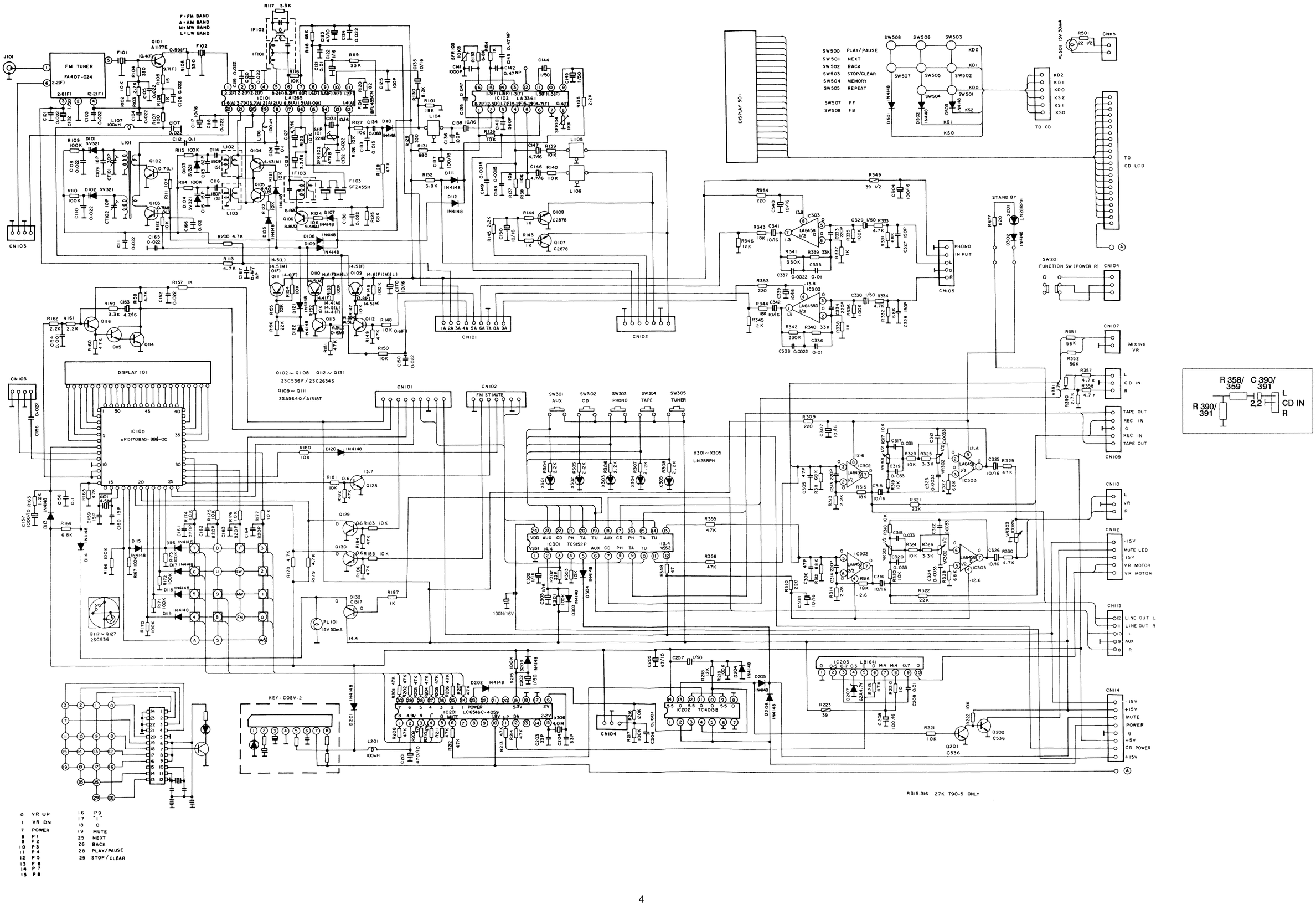
Circuit diagram RF (serial no. 90 CI 096001–90 CI 141750)



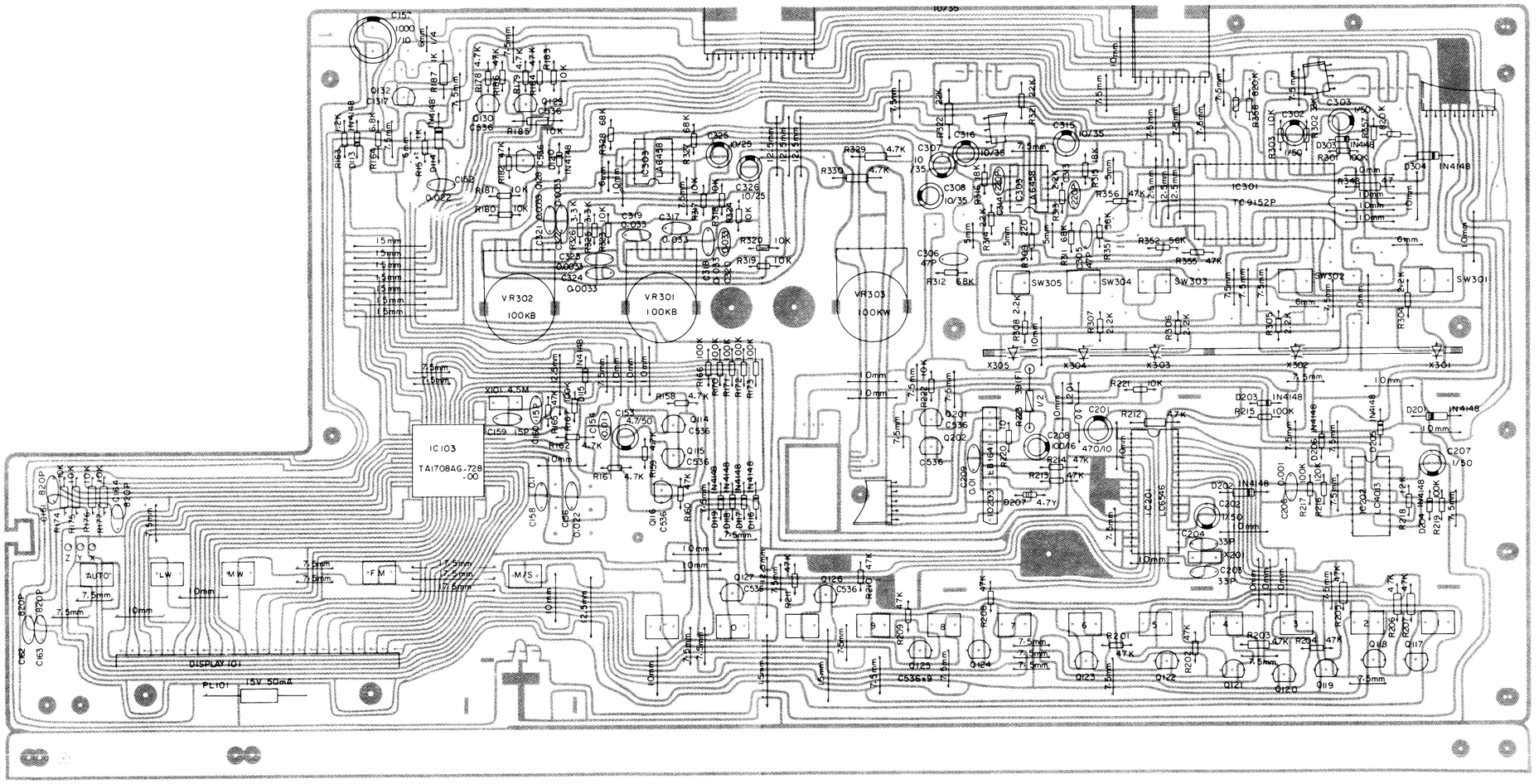
ab Serien-Nr.
from serial no.
90 CI 092001

Schaltbild HF (ab Serien Nr. 90 CI 165001)
Circuit diagram RF (from serial no. 90 CI 165001)

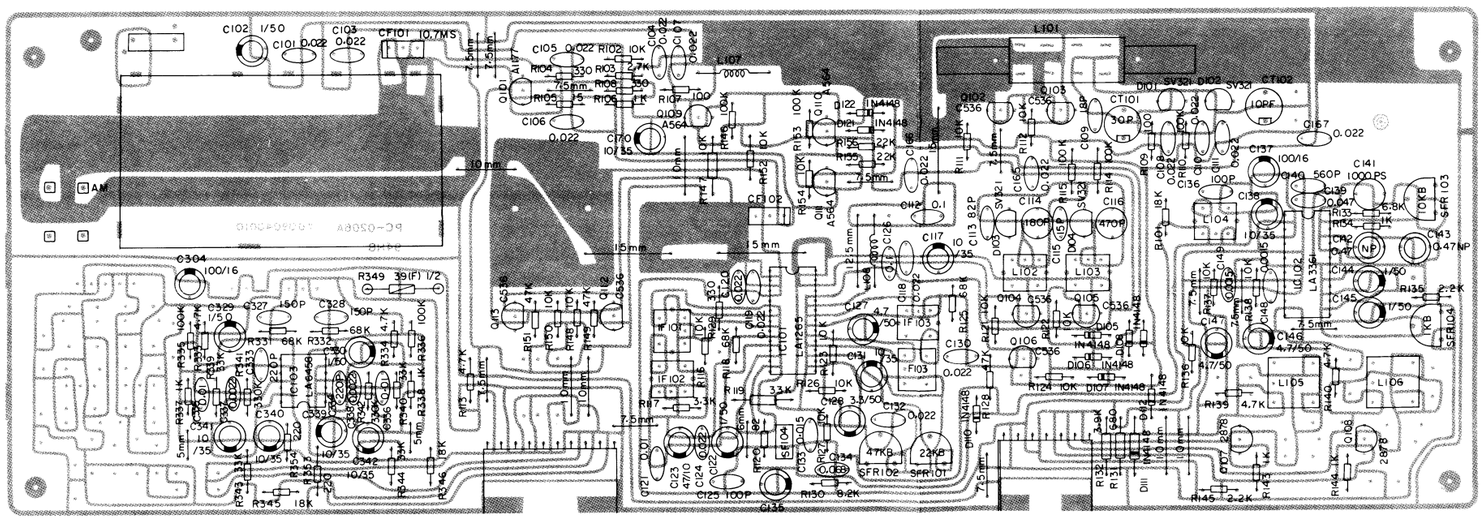


Bestückungsseite/Top view

Grundplatine Audio
Main P.C.B. assembly

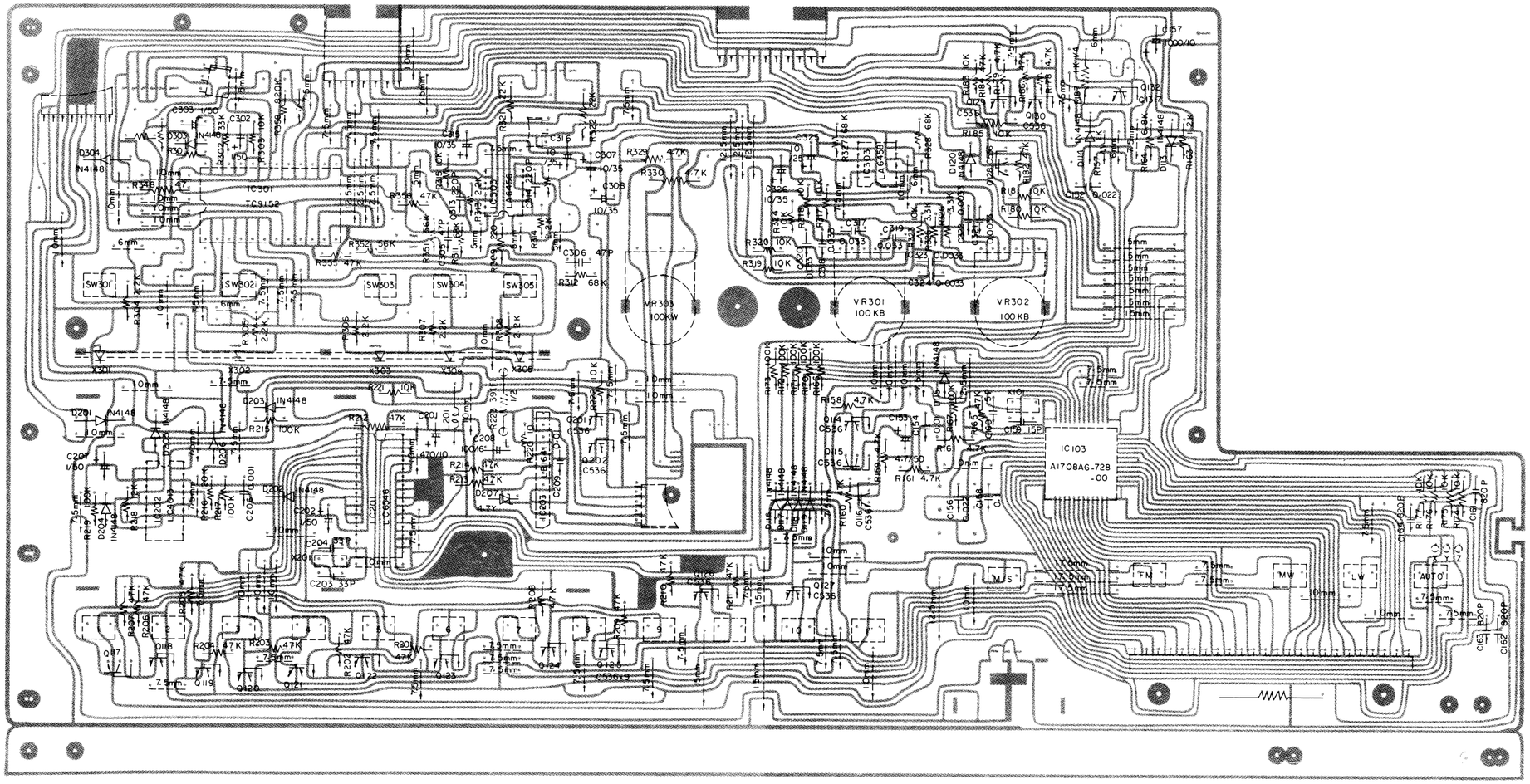


Tunerplatine
Tuner P.C.B. assembly

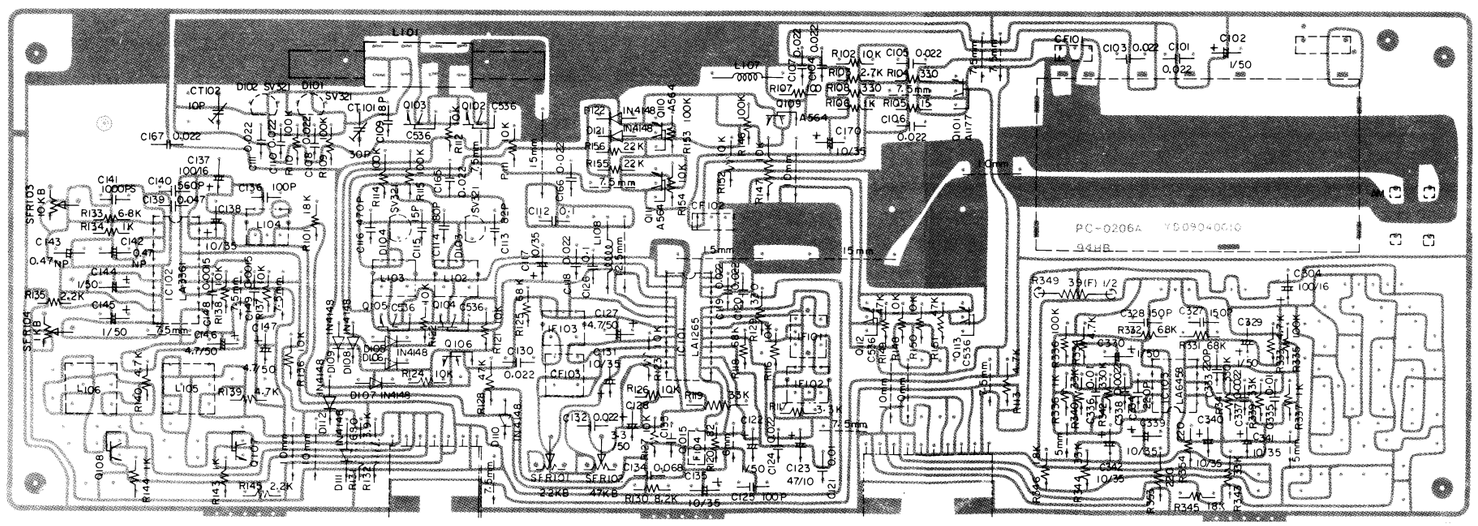


Leiterbahnseite/Bottom view

Grundplatine Audio
Main P.C.B.

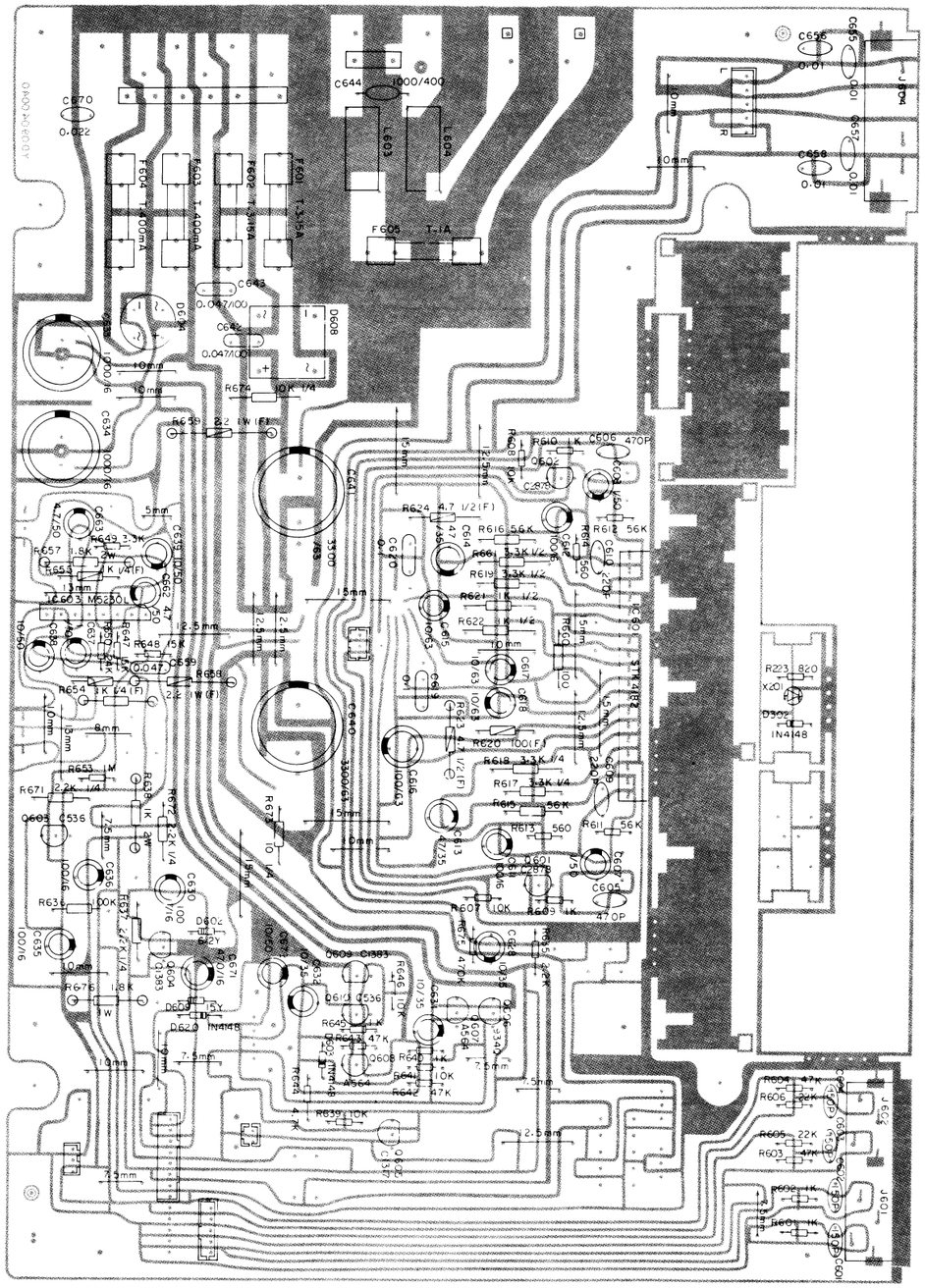


Tunerplatine
Tuner P.C.B. assembly

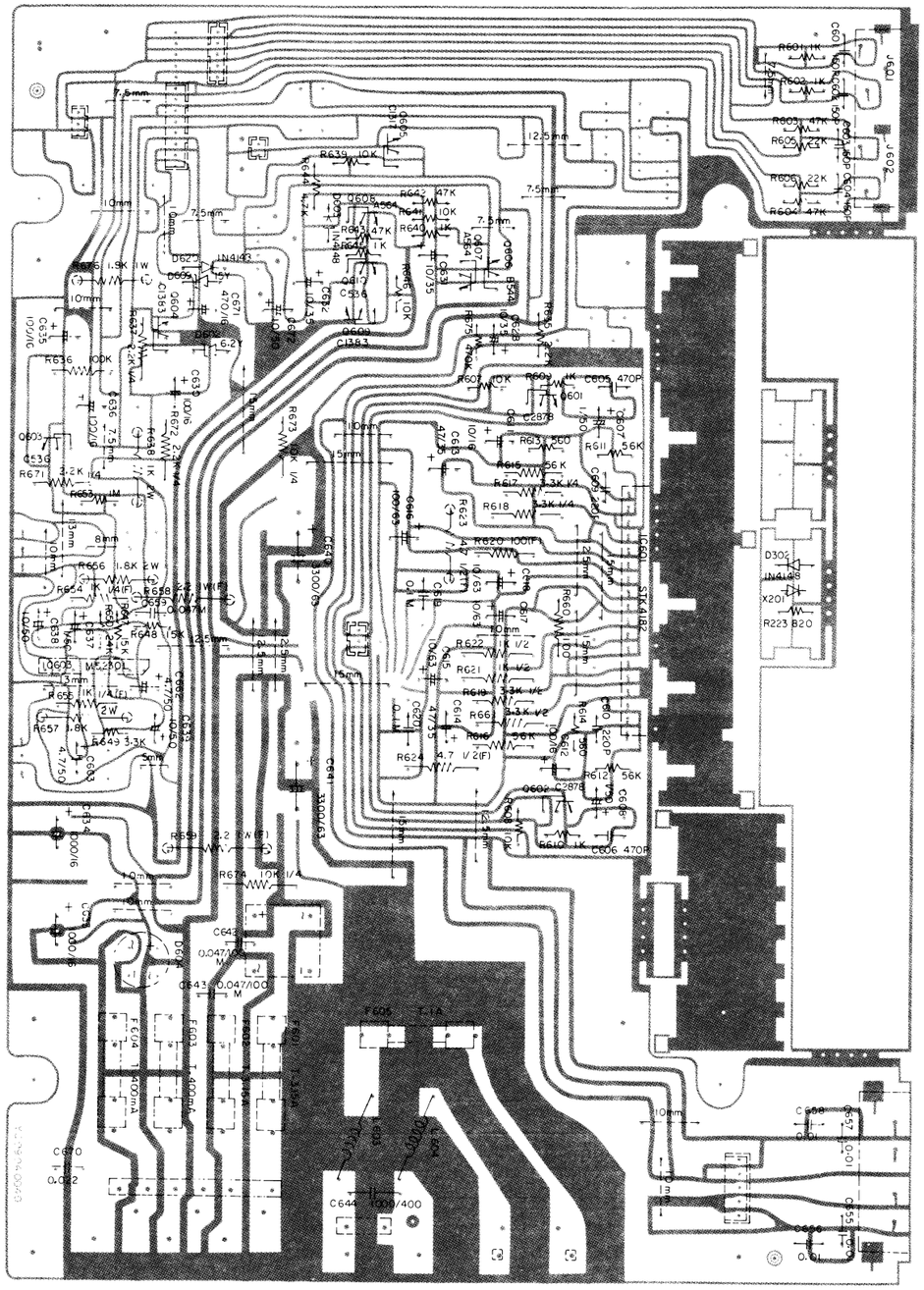


Platinendarstellung Netzteil/Endstufe CV 90–4
Audio P.C.B. CV 90–4

Bestückungsseite/Top view

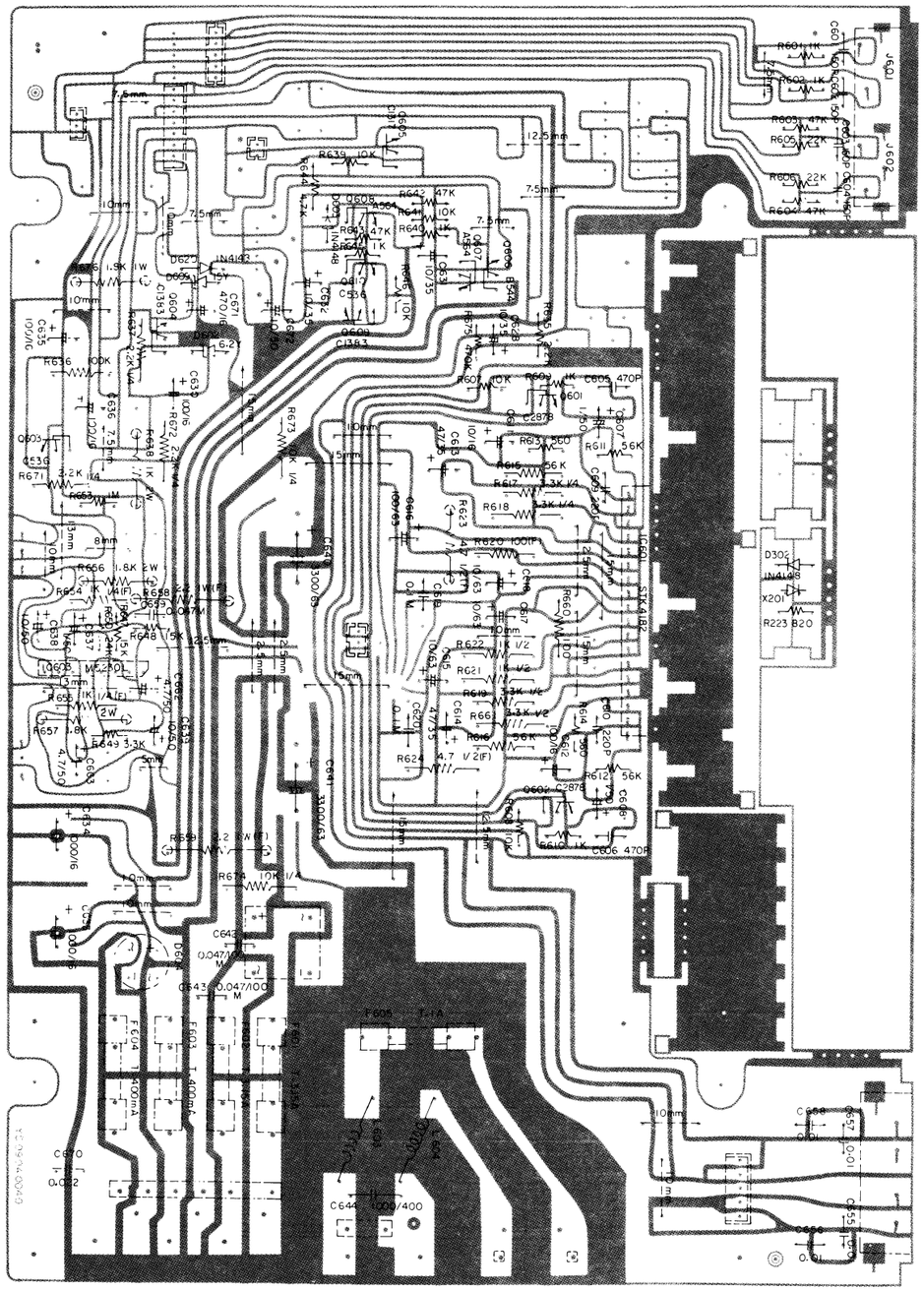


Leiterbahnseite/Bottom view

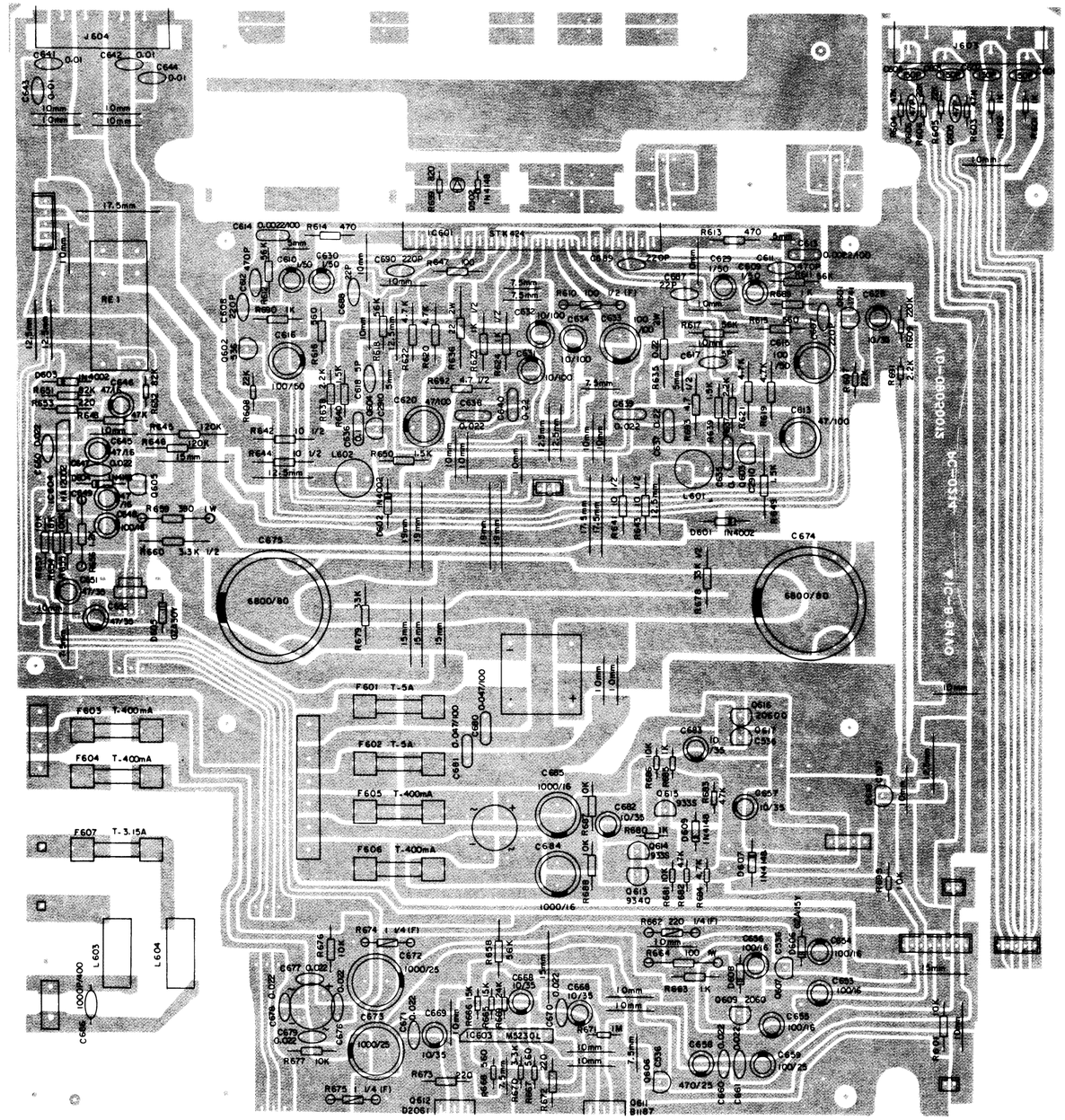


Platinendarstellung Netzteil/Endstufe CV 90–5
Audio P.C.B. CV 90–5

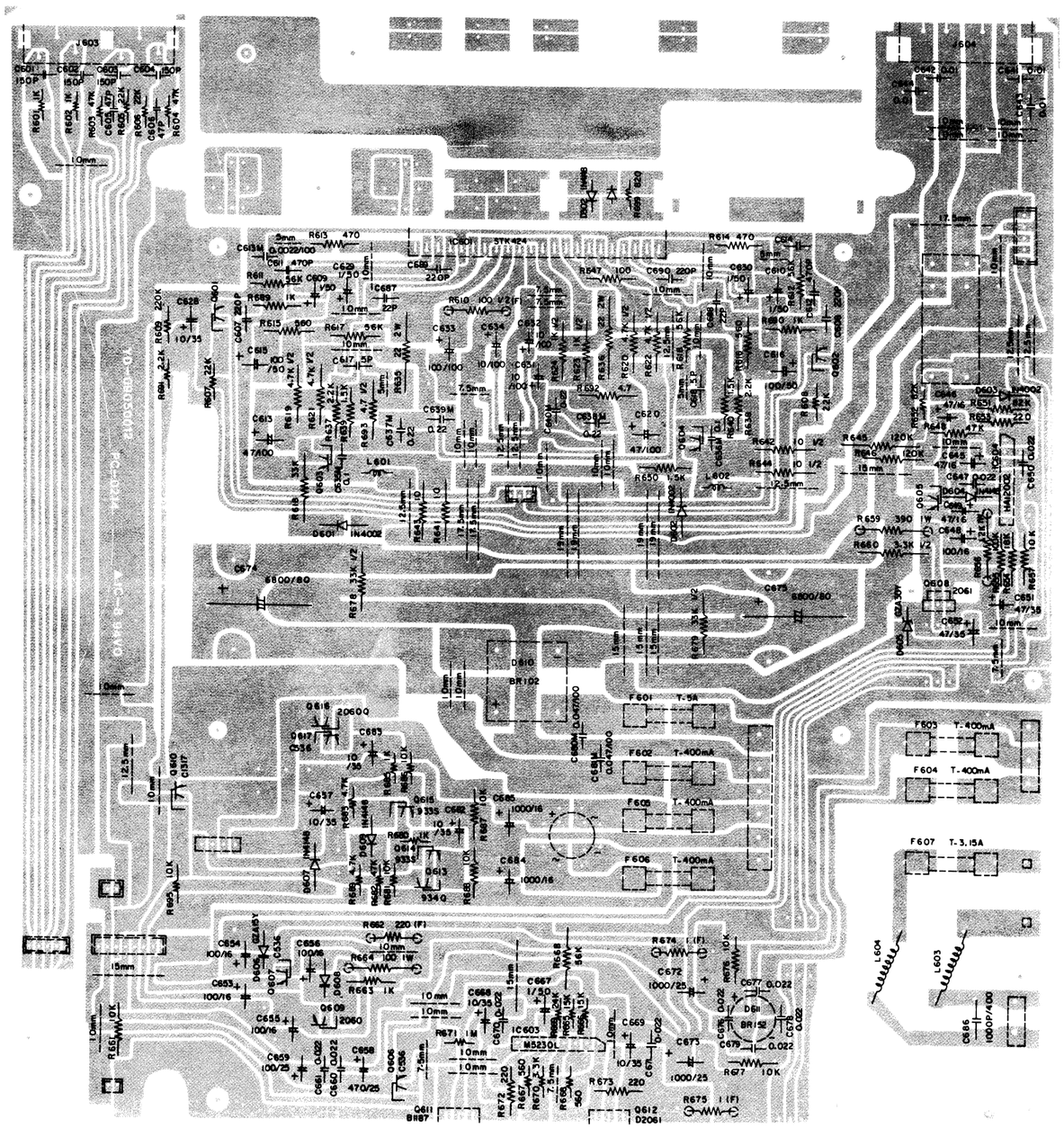
Leiterbahnseite/Bottom view



Bestückungsseite/Top view

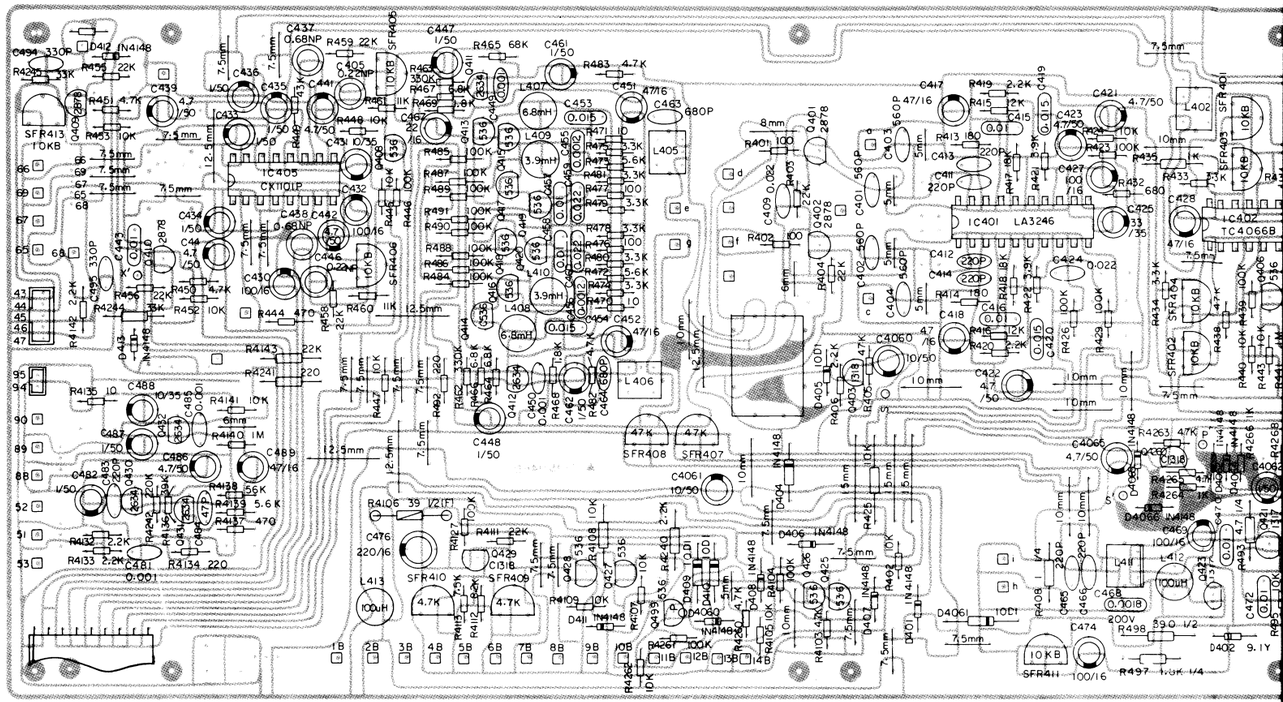


Leiterbahnseite/Bottom view

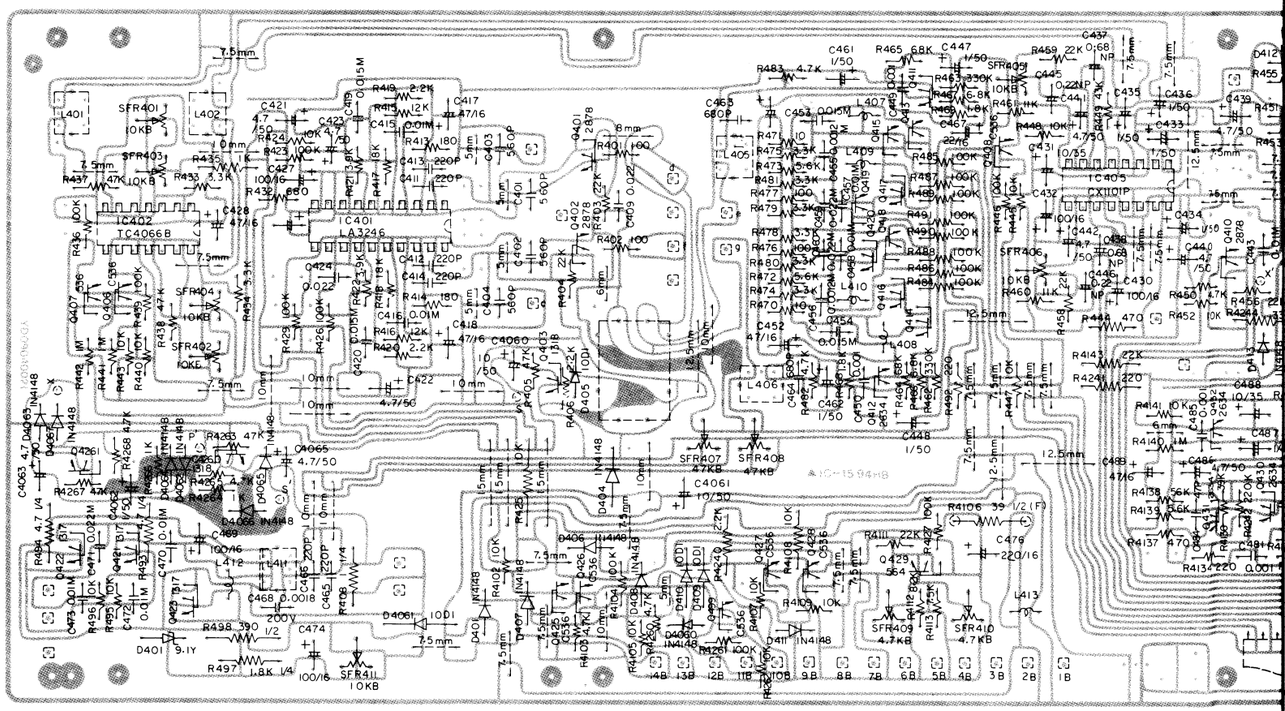


Platinendarstellung Cassette
Tape P.C.B.

Bestückungsseite/Top view

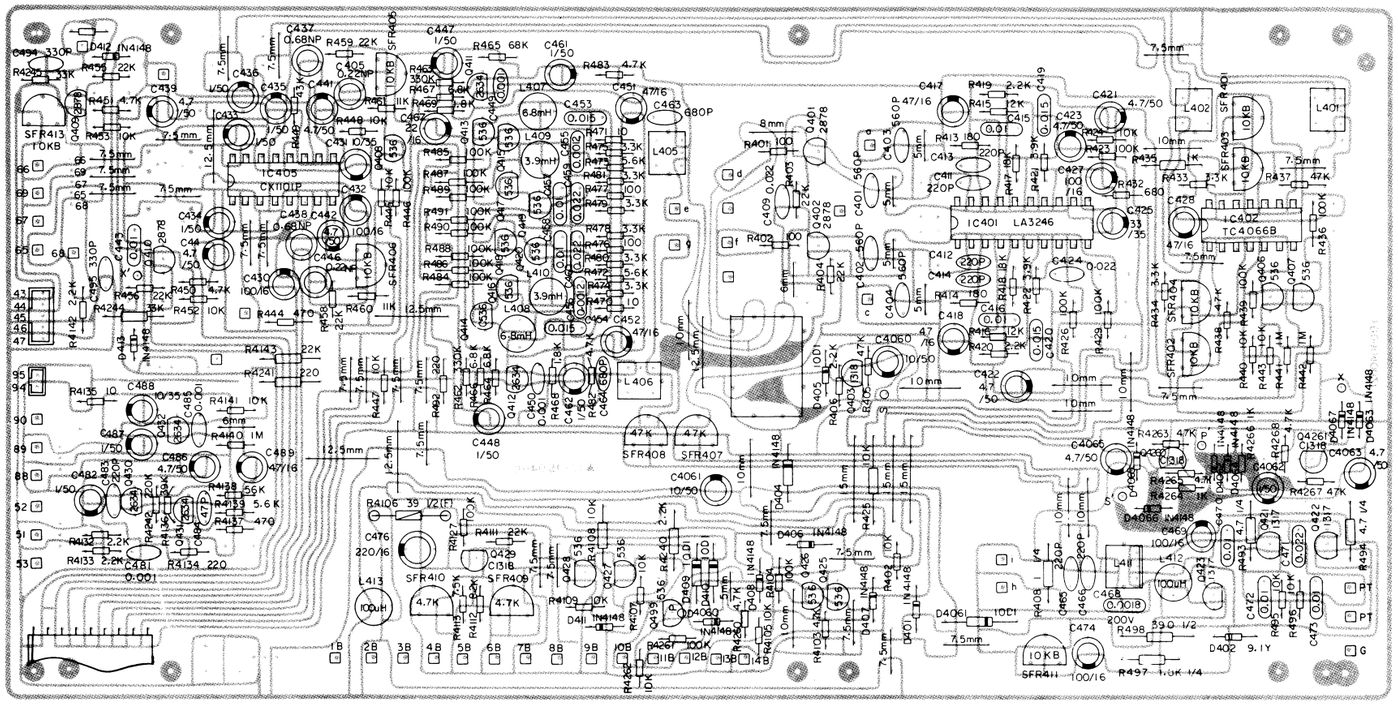


Leiterbahnseite/Bottom view

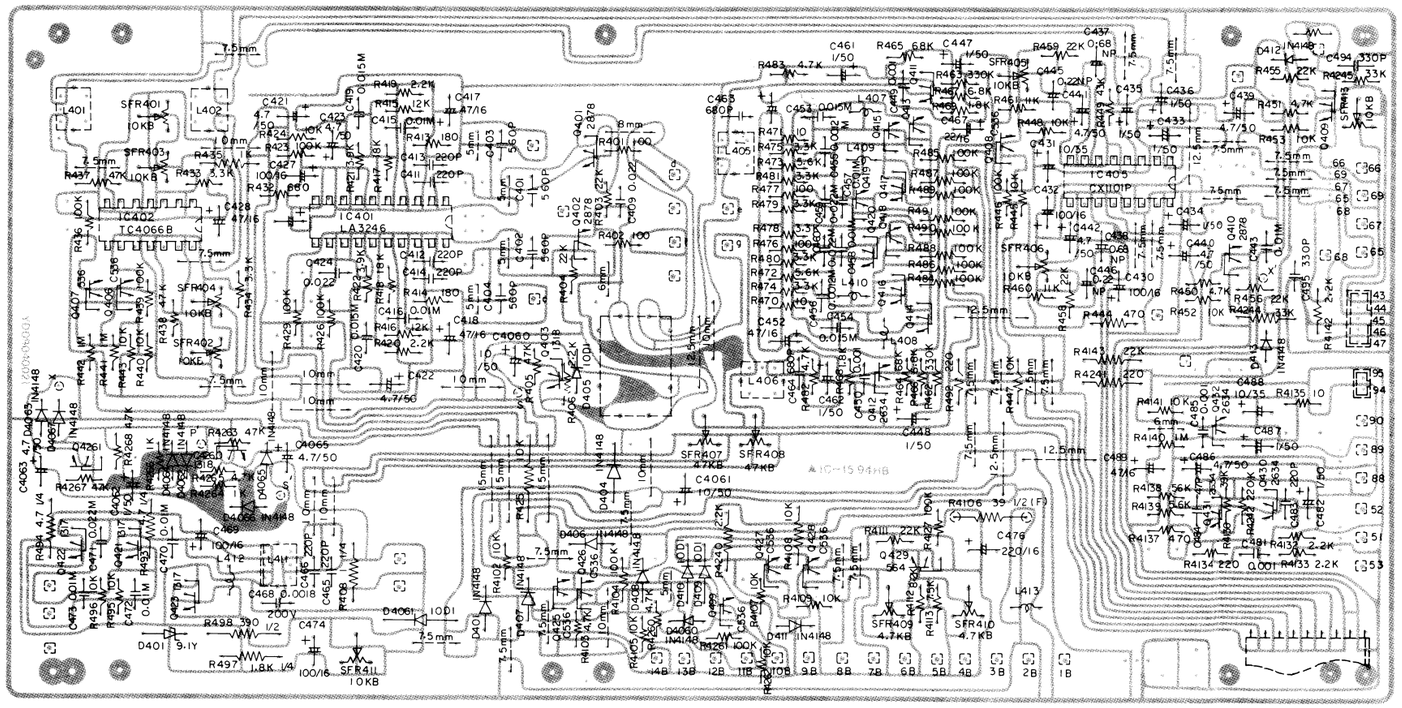


Platinendarstellung Cassette
Tape P.C.B.

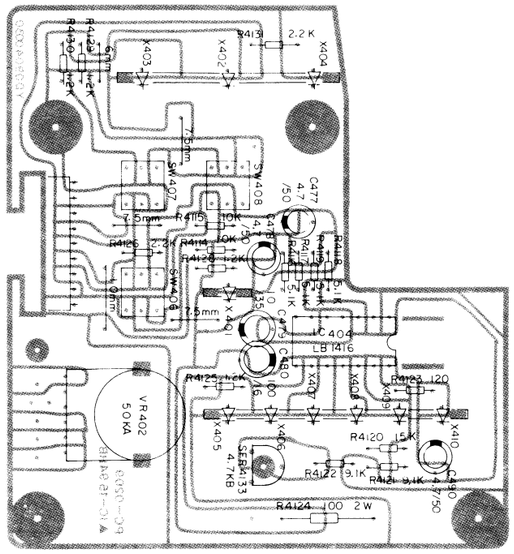
Bestückungsseite/Top view

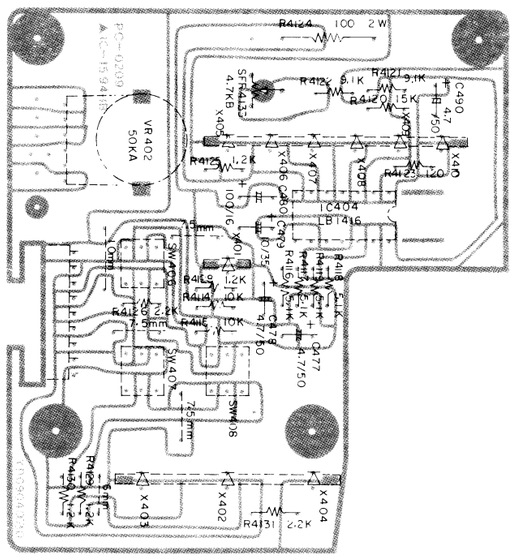


Leiterbahnseite/Bottom view

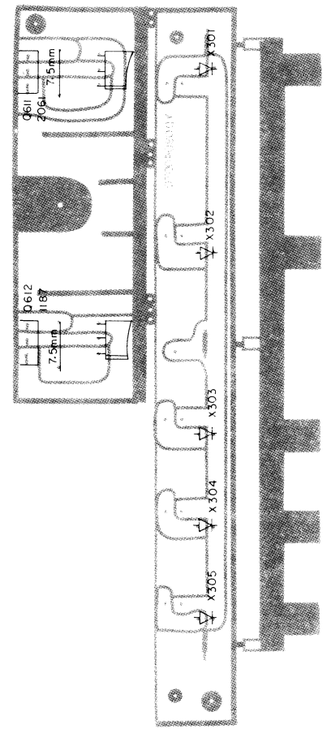


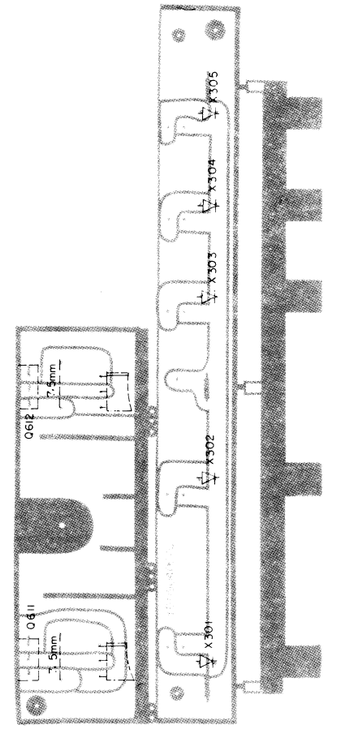
Funktionsplatine Cassette
Tape function P.C.B.





Platinendarstellung LED
LED P.C.B.

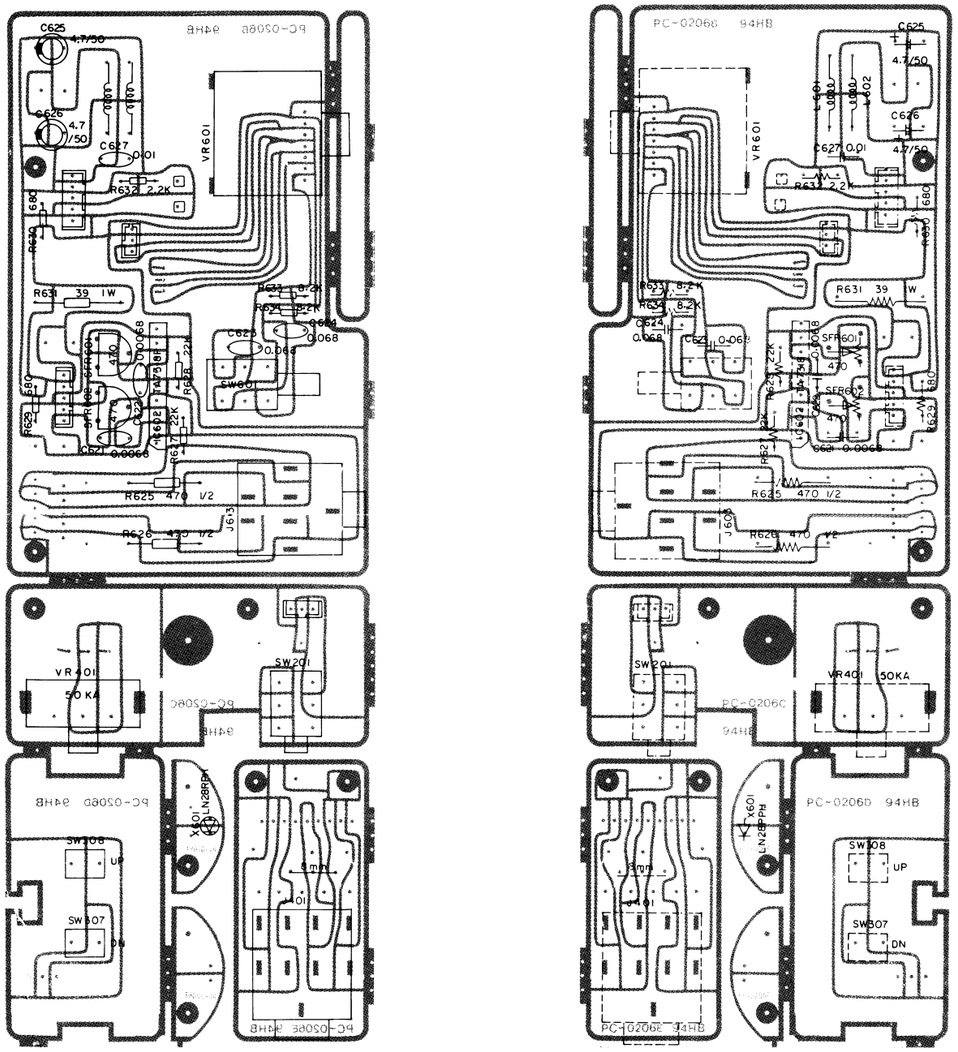




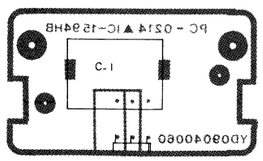
Bestückungsseite/Top view

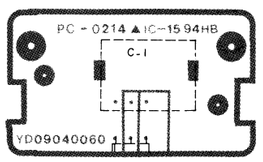
Leiterbahnseite/Bottom view

Platinendarstellung Volumenregler, Mixing und Netzschalter, Mikrofonbuchse, Tuning
VR P.C.B., Mixing VR/Function P.C.B., Mic. jack P.C.B., Tuning up/down P.C.B.

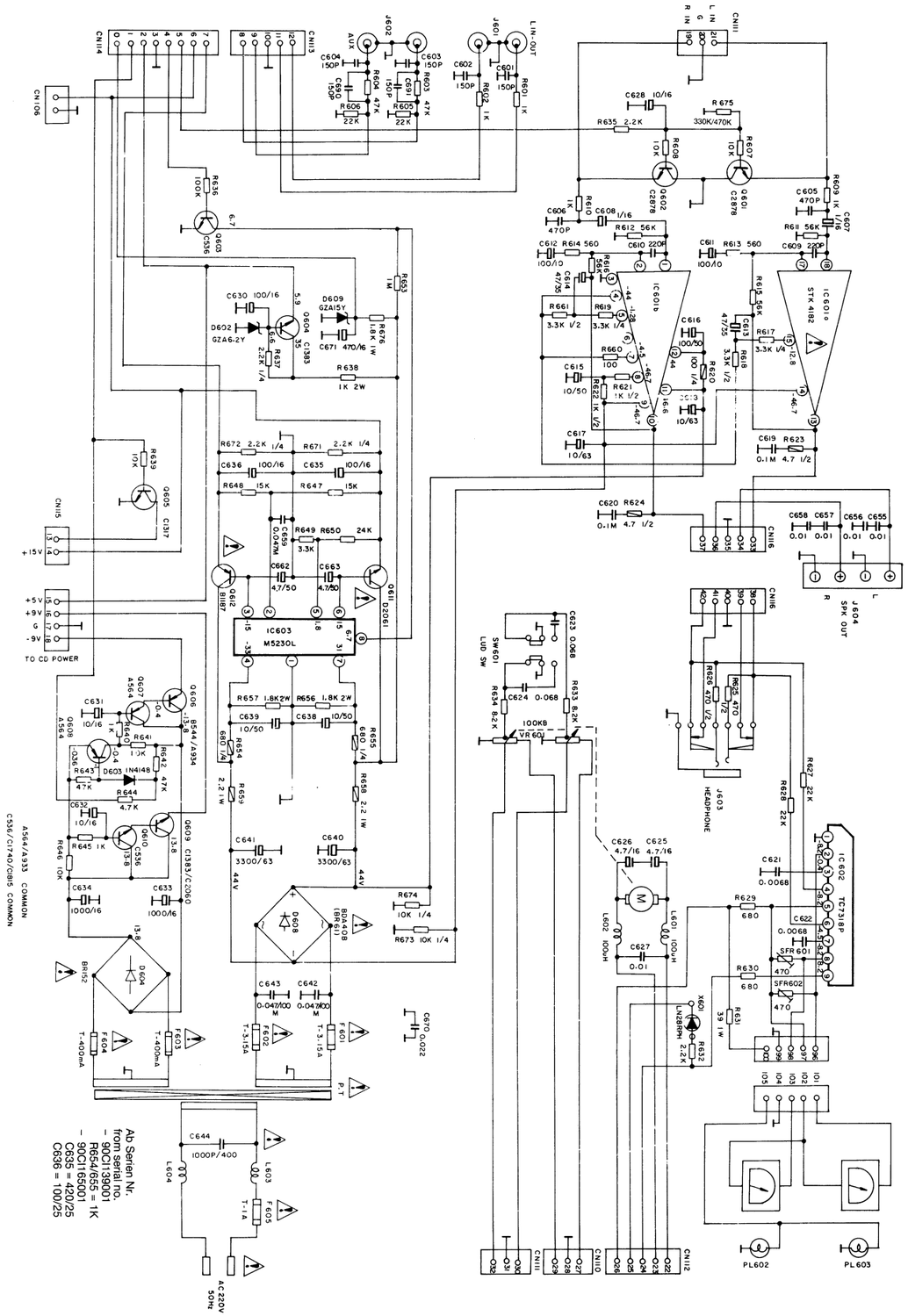


Platinendarstellung IR-Sensor
R/C Sensor P.C.B.

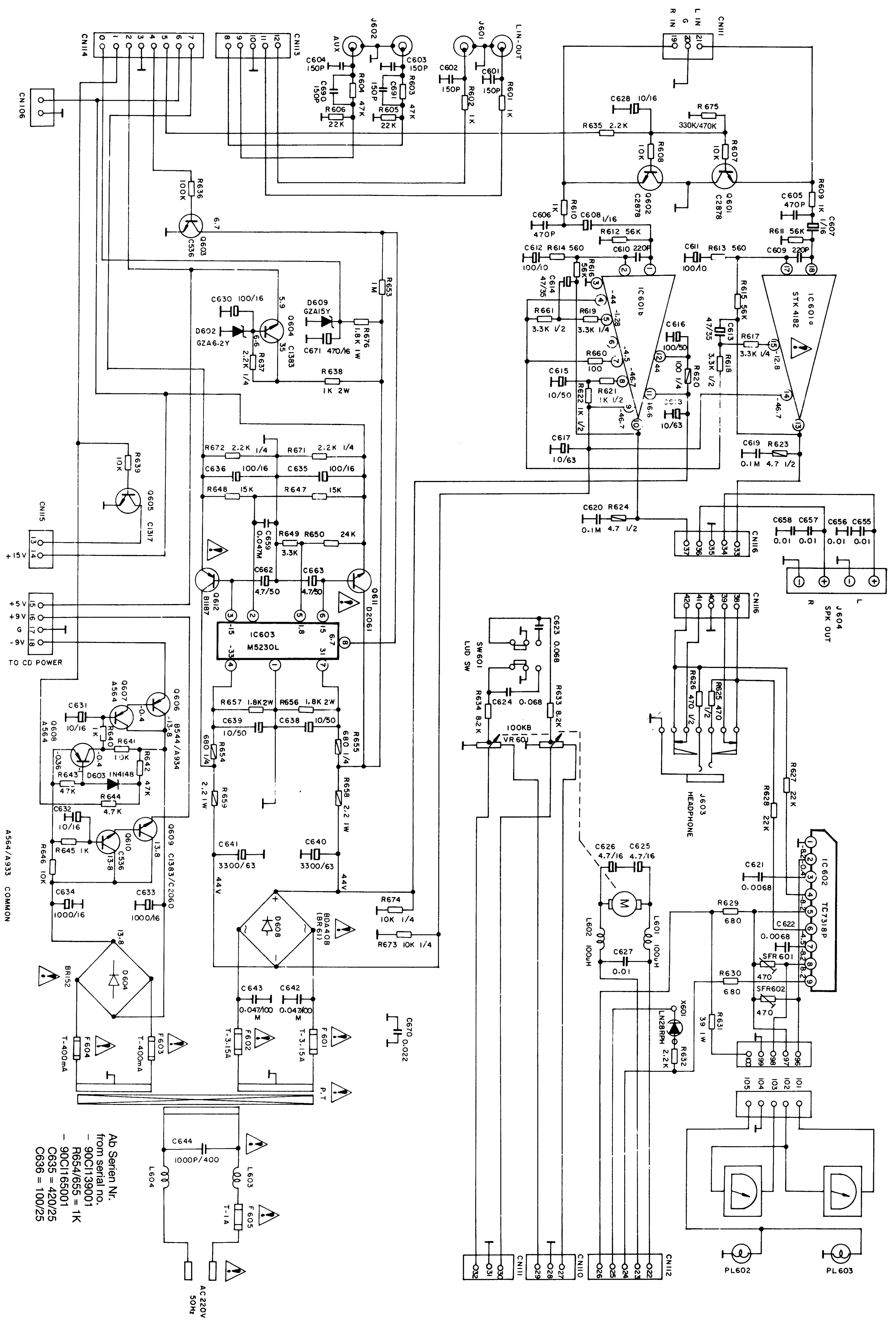




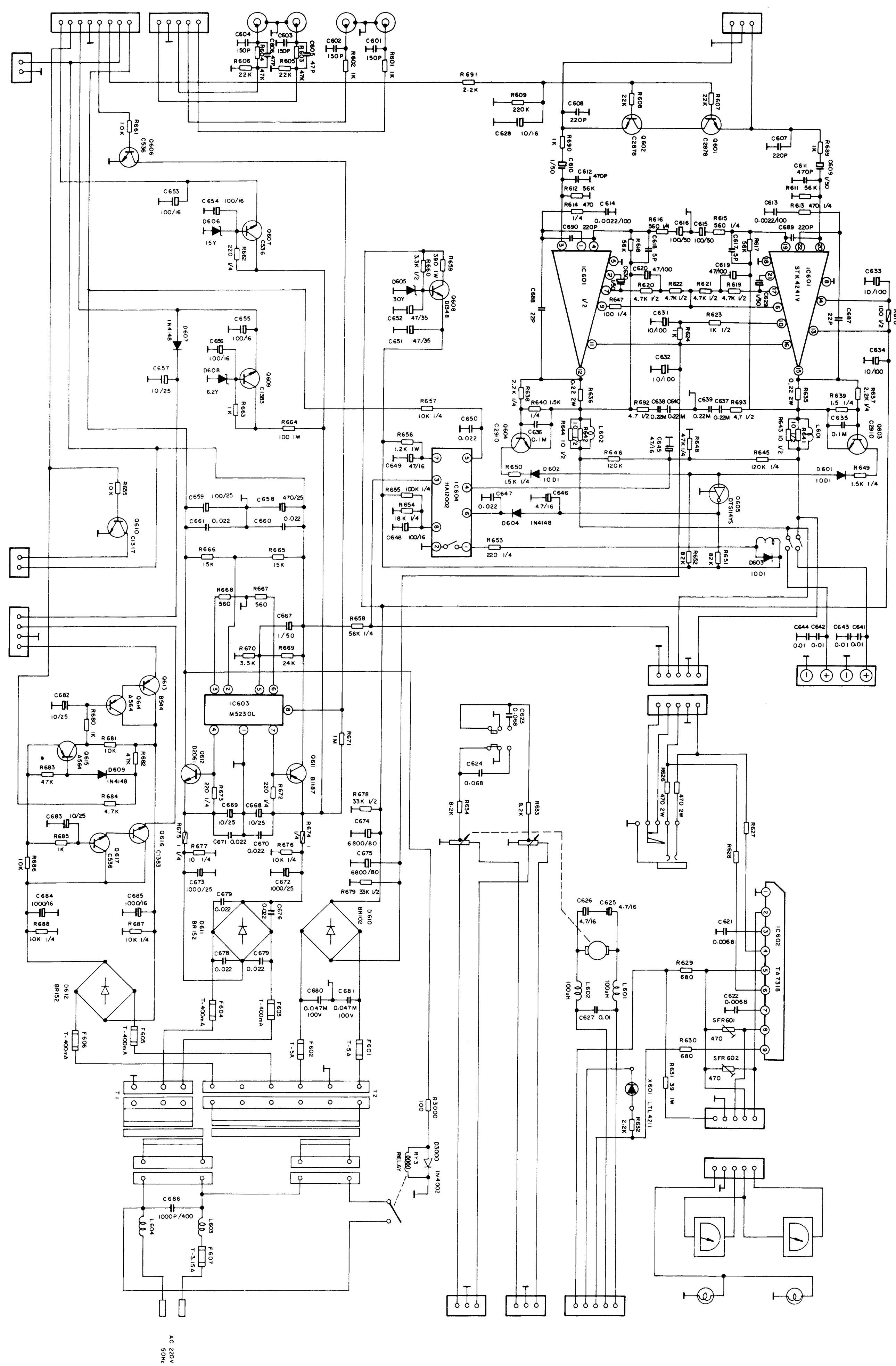
Schaltbild Netzteil/Endstufe CV 90–4
Circuit diagram power supply/output amplifier CV 90–4



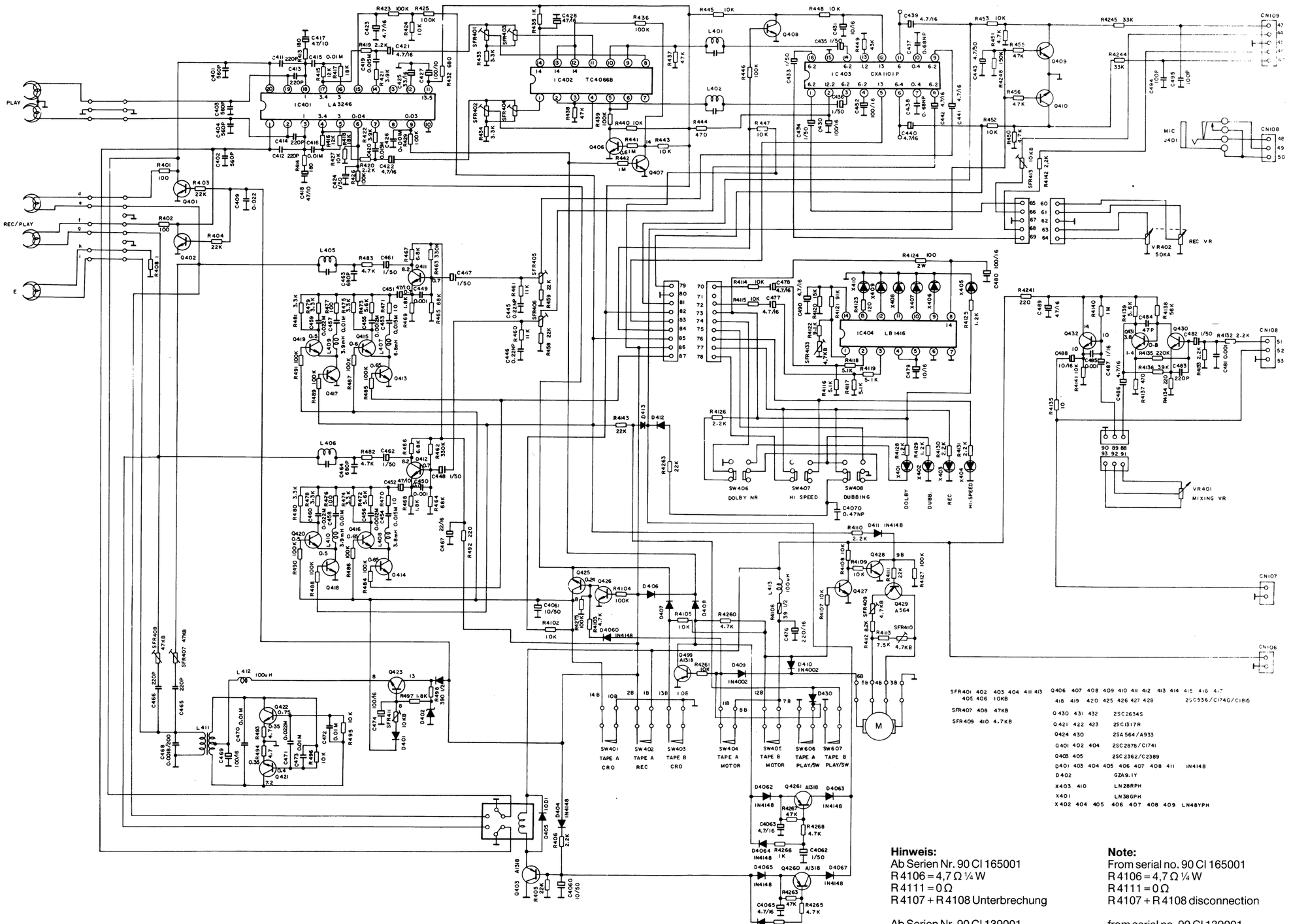
Schaltbild Netzteil/Endstufe CV 90–4
Circuit diagram power supply/output amplifier CV 90–4



Schaltbild Netzteil/Endstufe CV 90–5
Circuit diagram power supply/output amplifier CV 90–5



Schaltbild Cassette
Circuit diagram tape



SFR401 402 403 404 411 413 405 406 10KB
SFR407 408 47KB
SFR409 410 4.7KB

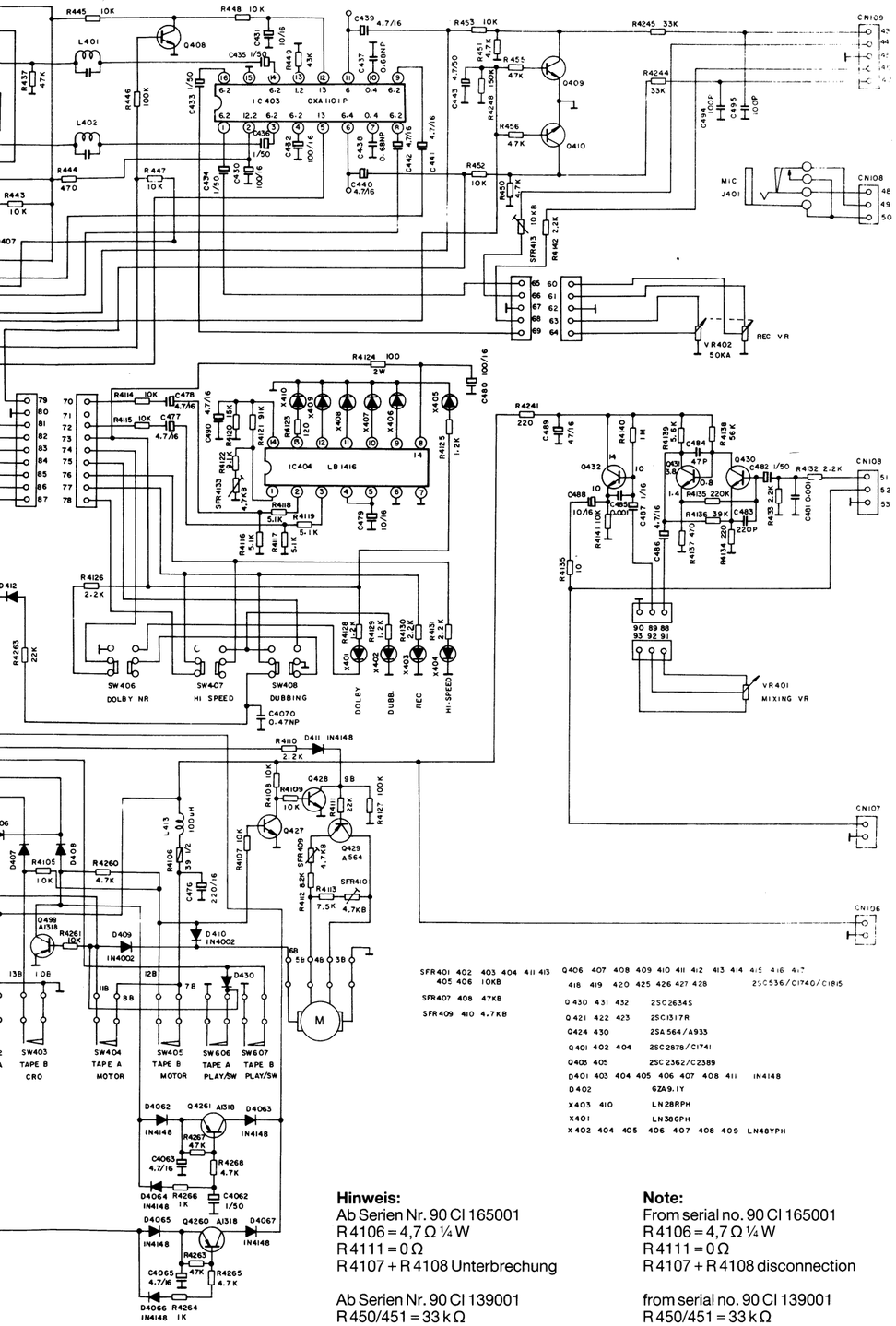
Q406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 425 426 427 428 2SC536/C1740/C1815
Q430 431 432 2SC2634S
Q421 422 423 2SC1317R
Q424 430 2SA564/A933
Q401 402 404 2SC2878/C1741
Q403 405 2SC2362/C2389
D401 403 404 405 406 407 408 411 IN4148
D402 GZA9.1Y
X403 410 LN28RPH
X401 LN38GPH
X402 404 405 406 407 408 409 LN48YPH

Hinweis:
Ab Serien Nr. 90 CI 165001
R 4106 = 4,7 Ω ¼ W
R 4111 = 0 Ω
R 4107 + R 4108 Unterbrechung

Ab Serien Nr. 90 CI 139001
R 450/451 = 33 k Ω

Note:
From serial no. 90 CI 165001
R 4106 = 4,7 Ω ¼ W
R 4111 = 0 Ω
R 4107 + R 4108 disconnection

from serial no. 90 CI 139001
R 450/451 = 33 k Ω



Hinweis:
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R 450/451 = 33 k Ω

Note:
From serial no. 90 CI 165001
R 4106 = 4,7 Ω ¼ W
R 4111 = 0 Ω
R 4107 + R 4108 disconnection

from serial no. 90 CI 139001
R 450/451 = 33 k Ω

Ersatzteilliste elektrische Teile (ohne CD-Player)
Spare parts list electrical parts (without CD player)

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
48 846 00	Grundplatine Audio	Main P.C.B. assembly		E6
48 849 00	Tunerplatine	Tuner P.C.B assembly		F1
48 850 00	Platine Cassette	Tape P.C.B. assembly		E8
48 851 00	Volumenreglerplatine (CV 90–4)	VR P.C.B. assembly (CV 90–4)		D6
48 852 00	Mixing + Netzschalterplatine	Mixing VR/Function P.C.B.		B4
48 873 00	Funktionsplatine Cassette	Tape function P.C.B. assembly		D0
48 874 00	Funktionsplatine CD	CD function P.C.B. assembly		D5
48 875 00	IR-Sensorplatine	RC sensor P.C.B. assembly		C0
27 849 00	Endstufenplatine	Audio P.C.B.		F9
48 968 00	Volumenreglerplatine (CV 90–5)	VR P.C.B. assembly (CV 90–5)		D4
31 481 00	IC UPD 1708 AG-72800	IC UPD 1708 AG-72800	IC 100	D2
48 833 00	IC UPD 1708 AG-88400	IC UPD 1708 AG-88400	IC 100	D3
48 834 00	IC TC 9152 P	IC TC 9152 P	IC 301	C1
46 830 00	IC LC 6546 C–4059	IC LC 6546 C–4059	IC 201	C4
26 131 00	IC TC 4013 BP	IC TC 4013 BP	IC 202	A8
21 330 00	IC LC 4013 B	IC LC 4013 B	IC 202	B5
46 829 00	IC LB 1641	IC LB 1641	IC 203	B2
48 835 00	IC LA 6548	IC LA 6548	IC 302, IC 303	A6
48 002 00	IC LA 1265	IC LA 1265	IC 101	B6
21 596 00	IC LA 3361	IC LA 3361	IC 102	B1
23 115 00	IC LA 6458 D	IC LA 6458 D	IC 103	B1
45 986 00	IC TC 7318 P	IC TC 7318 P	IC 602	B7
40 799 00	IC LA 3246	IC LA 3246	IC 401	B2
32 998 00	IC TC 4066 BP	IC TC 4066 BP	IC 402	B0
48 836 00	IC CX 1101 P	IC CX 1101 P	IC 403	C2
13 558 00	IC LB 1416	IC LB 1416	IC 404	B5
48 837 00	IC STK 4182 II	IC STK 4182 II	IC 601	D8
48 838 00	IC M 5230 L	IC M 5230 L	IC 603	B2
13 545 00	Transistor 2 SC 536 F SMALL SIZE	Transistor 2 SC 536 F SMALL SIZE	div.	A3
03 728 00	Transistor 2 SC 1317 R	Transistor 2 SC 1317 R	div.	A5
48 839 00	Transistor 2 SA 933 SS SMALL SIZE	Transistor 2 SA 933 SS SMALL SIZE	div.	A1
37 957 00	Transistor 2 SA 1177 E	Transistor 2 SA 1177 E	Q 101	A3
48 840 00	Transistor 2 SC 1741 ASR	Transistor 2 SC 1741 ASR	Q 107, Q 601	A2
34 691 00	Transistor 2 SC 2878 A	Transistor 2 SC 2878 A	Q 40..	A3
24 533 00	Transistor 2 SC 2634 S	Transistor 2 SC 2634 S	Q 4...	A3
40 663 00	Transistor 2 SA 1318 T	Transistor 2 SA 1318 T	div.	A2
48 841 00	Transistor 2 SD 2061 F	Transistor 2 SD 2061 F	Q 611	A6
48 842 00	Transistor 2 SB 1187 F	Transistor 2 SB 1187 F	Q 612	A7
48 843 00	Transistor 2 SC 2060 Q	Transistor 2 SC 2060 Q	Q 604, Q 609	A2
48 844 00	Transistor 2 SA 934 Q	Transistor 2 SA 934 Q	Q 606	A3
11 241 00	Diode 1 N 4148	Diode 1 N 4148	div.	A2
48 845 00	Zenerdiode HZ 5 B 1	Zenerdiode HZ 5 B 1	D 207	A1
22 955 00	Diode SVC 321	Diode SVC 321	D 101–104	B4
12 039 00	Diode 10 D1	Diode 10 D1	D 4...	A4
23 214 00	Zenerdiode HZ 9 C 1	Zenerdiode HZ 9 C 1	D 402	A1
21 350 00	Zenerdiode HZ 6 C 2	Zenerdiode HZ 6 C 2	D 602	A3
48 847 00	Gleichrichter BR 152	Rectifier BR 152	D 604	A5
21 413 00	Zenerdiode GZA 15 Y	Zenerdiode GZA 15 Y	D 609	A2
48 848 00	Diode BR 61/DBA 40 B	Diode BR 61/DBA 40 B	D 608	B2
29 597 00	Leuchtdiode LN 28 RPH rot	LED LN 28 RPH red	div.	A3
37 414 00	Leuchtdiode LN 38 GPL grün	LED LN 38 GPL green	X 401	A2
32 768 00	Leuchtdiode LN 48 YPL gelb	LED LN 48 YPL yellow	X 4...	A4
31 482 00	Quarz 4,5 MHz	Crystal 4,5 MHz	X 101	A8
46 839 00	Keramik Schwingkreis 4,0 MHz	Ceramic resonator 4.0 MHz	X 306	A7
34 320 00	Drossel 100µH TDK	Choke coil. 100µH TDK	div.	A7
12 110 00	FM Ant.-Filter SFE 10.7 MS3-A rot	FM ant. filter SFE 10.7 MS3-A red	CF 101–102	A6
48 003 00	AM Schwingkreis BFU 455 C 4 N	AM resonator BFU 455 C 4 N	CF 104	A8
40 295 00	Filter MPX N01-673-748	MPX coil N01-673-748	L 105–106	B0
45 992 00	AM-Filter SFZ 455 HL	AM filter SFZ 455 HL	CF 103	B0
40 292 00	LW-Oszillator	LW oscillator coil	L 102	A3
40 291 00	MW-Oszillator	MW oscillator coil	L 103	A3
24 372 00	Filter 114 kHz 5307–293 B	Filter coil 114 kHz 5307–293 B	L 104	A6
46 475 00	Spule AM 2164-004A-450 kHz	AM IFT coil 2164-004A-450 kHz	IF 103	A6
48 853 00	FM DET Spule (A) N673-097	FM DET coil (A) N673-097	IF 101	A7
48 854 00	FM DET Spule (B) N673-098	FM DET coil (B) N 673-098	IF 102	A7
48 855 00	Ferritantenne kpl.	LW/MW bar ant. coil	L 101	B3
37 784 00	Drossel 100µH	Choke coil 100µH	L 412–413	A4
37 783 00	Drossel 3,9 mH	Choke coil 3.9 mH	L 409–410	A4
37 782 00	Drossel 6,8 mH	Choke coil 6.8 mH	L 407–408	A4
46 723 00	Tiefpaß-Filter N-673-088	Trap coil N-673-088	L401–404	A8
48 004 00	Löschoszillator N-673-089	Tape oscillator coil N-673-089	L 411	A7

Ersatzteilliste elektrische Teile (ohne CD-Player)
Spare parts list electrical parts (without CD player)

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
34 324 00	Netzdrossel 0,6 cx 4 cx 22 ½t	Line filter 0.6 cx 4 cx 22 ½t	L 603–604	A1
24 377 00	Trimmerkondensator VCT IF 133 A 30pF 5	Trimming capacitator VCF IF 133 A 30pF 5	CT 101	A3
40 233 00	Trimmerkondensator VCT IC 163 A 10pF 5	Trimming capacitator VCT IC 163 A 10pF 5	CT 102	A5
40 306 00	Tuner FE 407–G24	Tuner FE 407-G24	Tn. 101	D6
24 335 00	Sicherungswiderstand 39 Ohm ½ Watt	Fuse resistor 39 Ohm ½ Watt	R 223, R 4106	A3
48 856 00	Sicherungswiderstand 1 kOhm ¼ Watt	Fuse resistor 1 kOhm ¼ Watt	R 654–655	A1
03 419 00	Sicherungswiderstand 100 Ohm ¼ Watt	Fuse resistor 100 Ohm ¼ Watt	R 620	B4
31 129 00	Sicherungswiderstand 4,7 Ohm ½ Watt	Fuse resistor 4.7 Ohm ½ Watt	R 623–624	A2
48 857 00	Sicherungswiderstand 2,2 Ohm 1 Watt	Fuse resistor 2.2 Ohm 1 Watt	R 658–659	A2
37 022 00	Trimmpoti 1 kOhm	Semi-fixed resistor 1 kOhm	SFR 104	A4
37 443 00	Trimmpoti 10 kOhm	Semi-fixed resistor 10 kOhm	div.	A3
32 587 00	Trimmpoti 22 kOhm	Semi-fixed resistor 22 kOhm	SFR 101	A4
34 538 00	Trimmpoti 47 kOhm	Semi-fixed resistor 47 kOhm	div.	A2
37 946 00	Trimmpoti 470 Ohm	Semi-fixed resistor 470 Ohm	SFR 601-602	A4
37 441 00	Trimmpoti 4,7 kOhm	Semi-fixed resistor 4.7 kOhm	div.	A3
48 858 00	Drehwiderstand 2 × 100 kOhm	Rotary resistor 2 × 100 kOhm	VR 301–302	B1
48 859 00	Drehwiderstand 100 kOhm	Rotary resistor 100 kOhm	VR 303	B0
48 860 00	Drehwiderstand Motor 2 × 100 kOhm	Rotary resistor motor 2 × 100 kOhm	VR 601	C8
48 861 00	Drehwiderstand 50 kOhm	Rotary resistor 50 kOhm	VR 401	B0
40 301 00	Drehwiderstand 2 × 50 kOhm	Rotary resistor 2 × 50 kOhm	VR 402	B0
48 862 00	Tastschalter	Tact switch	div.	A2
48 863 00	Druckschalter	Push switch Spul 19	SW 601, 201	A7
48 864 00	Druckschalter	Push switch PS 135 M2	SW 406–408	A8
29 651 00	Tastschalter	Tact switch	div.	A3
48 866 00	Relais	Relay	RE 1	B9
48 867 00	Display (Tuner) LTP GM 9051 A	Display LTP GM 9051 A	DS 101	C5
48 868 00	Lampe 15 V 50 mA	Lamp 15 V 50 mA	PL 101	A5
46 842 00	Kopfhörerbuchse	Headphone jack	J 603	B0
48 869 00	Mikrophonbuchse	Microphone jack	J 401	A8
48 870 00	Display (CD) LTP 4 R 2031 A	Display LTP 4 R 2031 A	DS 501	C4
48 865 00	Lampe 15 V 30 mA	Lamp 15 V 30 mA	PL 501	A5
48 871 00	Chinch-Buchse 4polig	RCA 4-pin jack	J 601, 602	B0
48 872 00	Lautsprecherbuchse	Speaker jack	J 604	A9
48 876 00	Anzeigeinstrument	Power meter		C8
27 826 00	Netztrafo	Power transformer		E7

Zusätzliche Teile für CV 90–5
Additional parts for CV 90–5

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
48 958 00	IC BU 4013 B	IC BU 4013 B	IC 202	A6
48 959 00	IC BU 4558	IC BU 4558	IC 302–303	B2
48 960 00	IC BU 4066 B	IC BU 4066 B	IC 402	A5
48 961 00	IC HA 12002	IC HA 12002	IC 604	B4
38 429 00	IC STK 4241 V	IC STK 4241 V	IC 601	E2
29 581 00	IC DTC 114 VS	IC DTC 114 VS		A4
34 692 00	Transistor 2 SC 1740 SS	Transistor 2 SC 1740 SS	div.	A2
48 962 00	Transistor 2 SC 2910 S	Transistor 2 SC 2910 S	Q 603, 604	A3
11 239 00	Diode 1 N 4002	Diode 1 N 4002	div.	A1
48 963 00	Gleichrichterdiode BR 102	Rectifier diode BR 102	D 610	B4
48 964 00	Zenerdiode 30–2	Zenerdiode 30–2	D 605	A1
48 913 00	Drucktaster	Push switch Spul 12	SW 201	A7
48 965 00	Relais	Relays	RE 1	C1
27 827 00	Netztransformator	Power transformer		E1
18 558 00	Sicherungswiderstand 220 Ohm ¼ Watt	Fuse resistor 220 Ohm ¼ Watt	R 662	A4
18 576 00	Sicherungswiderstand 1 Ohm ¼ Watt	Fuse resistor 1 Ohm ¼ Watt	R 674–675	A2
34 994 00	Sicherungswiderstand 100 Ohm ½ Watt	Fuse resistor 100 Ohm ½ Watt	R 610	A2

ALIGNMENT PROCEDURE

MODEL:T90-4

1
LW

GENERAL ALIGNMENT CONDITIONS

1.Signal input must be kept as low as possible to avoid overload and clipping
(Use highest possible sensitivity of output indicator.)

2.Signal input should be kept as low as possible to avoid A.G.C action.
(Set output indicator to highest sensitvity.)

3.Marker insertion and amplitude should not distort the oscillator and amplitude should not distort the oscilloscope trace.

4. STANDARD MODULATION is 400 Hz 30%.

INSTRUMENT REQUIRED

Signal source
AM signal generator
Radio sweep generator
Sweep oscilloscope

Output indicators
AC millivolt meter
Oscilloscope

STEP	CONNECT SIGNAL SOURCE TO-	CONNECT OUTPUT INDICATOR	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO-	ADJUST	ADJUST FOR-
1.	Set function selector switch on the front panel to "LW" position.					
2	Sweep generator connected to a loop or short piece of wire Placed near AM antenna	Sweep oscilloscope connected to wire pin of the C 43 or C 44 and volume to maximum	See amplitude of 455 KHz	Quiet point on band near 515 KHz	IF103	Amplitude of filter
3	Signal generator connected to a loop	AC millivolt meter and oscilloscope connected across speaker	137 KHz	137KHz	LW OSC L102	maximum
4			290 KHz	290KHz		
5			170 KHz	170KHz	LW BAR ANT COIL	
6			270 KHz	270KHz	RF Trimmer CT101	
7	Repeat step 3 through 6 as necessary to obtain maximum sensitivity on station.					

ALIGNMENT PROCEDURE

MODEL T90-4

2

MW

GENERAL ALIGNMENT CONDITIONS:

1. Signal input must be kept as low as possible to avoid overload and clipping. (Use highest possible sensitivity of output indicator.)
2. Signal input should be kept as low as possible to avoid A.G.C. action. (Set output indicator to highest sensitivity.)
3. Maker insertion and amplitude should not distort the oscillator and amplitude should not distort the oscilloscope trace.
4. Standard modulation is 400 Hz.

INSTRUMENTS REQUIRED

Signal source

AM signal generator
Radio sweep generator
Sweep oscilloscope

Output indicators

AC millivolt meter
Oscilloscope

STEP	CONNECT SIGNAL SOURCE TO-	CONNECT OUTPUT INDICATOR-	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO-	ADJUST	ADJUST FOR-
1	Set function selector switch on the front panel to "MW" position.					
2.	Sweep generator connected to a loop or short Piece of wire Placed near AM antenna.	Sweep oscilloscope connected to wire pin of the C 43 of C 44 and volume to mzximum	See amplitude of 455 KHz	Quiet point on band near 513 KHz.	IF103	Amplitude of filter
3.	Signal generat- or connected to a loop.	AC millivolt meter and oscilloscope connected across speaker	513KHz	513KHz	AM OSC L103	maximum
4			1620KHz	1620KHz		
5			600KHz	600KHz	AM BAR ANT COIL	
6			1400 KHz	1400 KHz	RF Trimmer CT 102	
7	Repeat step 3 through 6 necessary to obtain maximum sensitivity on station.					

ALIGNMENT PROCEDURE

MODEL: T90-4

3

FM

GENERAL ALIGNMENT CONDITION

1.Signal input must be kept as low as possible to avoid ocerload clipping.
(Use highest possitivity of output indicator).
2.Makers must be accurate (crystal controlled or calibrated). The 10.7 MHz marker used in each section of the FM alignment must be the same.
3.Signal input should be kept as low as possible to avoid A.G.C. ACTION.
(Set output indicator to highest sensitivity).
4.FM signal generator RF output frequency must be monitoring.
5.Standard modulation is 1 KHz (40KHz).

INSTRUMENTS REQUIRED.

Signal sources
FM signal generator
*Radio sweep generator *
Sweep oscilloscope
Frequency counter

Output indicators
AC millivolt meter
Oscilloscope
114 KHz signal generator

STEP	CONNECT SIGNAL SOURCE TO-	CONNECT OUTPUT INDICATOR TO-	SET SIGNAL OR INSERT MARKER	SET RADIO DIAL TO	ADJUST	ADJUST FOR-
1.Set function selector switch on the front panel to "FM" Position.						
2	Radio sweep generator connect to FM front and tuner pin 3	Oscilloscope connected to wire pin of the C43 of C44 and volume VR to maximum	10.6 10.7 10.8MHz marker	Quiet Scale pointer on band	IF101 IF102	Straightness and symmetry of "S" curve with 10.7 MHz makerd at zero crossover

ALIGNMENT PROCEDURE

MODEL: T90-4

4
MPX

GENERAL ALIGNMENT CONDITION

1.Adjust FM signalgenerator output to 1mV (60dB) with MPX MODULATION 1 KHz
Deviation=33.75 KHz Pliot=6 KHz

INSTRUMENTS REQUIRED

Signal source

FM signal gererator
Stereo signal generator

Output indicator

Frequency counter
AC millivolt meter
Oscilloscope

STEP	CONNECT SIGNAL SOURCE TO-	CONNECT OUTPUT INDICATOR TO-	SET SIGNAL	SET RADIO DIAL	ADJUST	ADJUST FOR-
1	Set function selector switch on the front panel to "FM STEREO" Position.					
2	FM signal generator connected to FM aerial	Frequency counter connect to MPX test point	98 MHz and modulation signal off too	98 MHz	SFR103	19.00 KHz + / -50 Hz
3	FM signal generator connected to FM aerial	Connect to Scope of 2 CH	98MKz and Modulation 40KHz pilot 6KHz 1KHz Signal	98MKz	SFR104	The L and R More better Separating

Abgleichanweisung Cassette
Alignment procedure cassette

TAPE POSITION Recorderstellung	INPUT SIGNAL Eingangsspannung	TEST TAPE Testcassette	MEASURING INSTRUMENT Meßgerät	TEST POINT Meßpunkt	ADJUSTMENT LOCATION Abgleichpunkt	MEASURING SIGNAL Meßsignal

1. Head azimuth/A/W-Kopf-Einstellung

PLAYBACK		MTT-114 N 10 kHz	V.T.V.M AC-Millivoltmeter	OUT L CH OUT R CH	AZIMUTH SCREW	NF-max.

2. Tape speed/Geschwindigkeit

PLAYBACK LOW		MTT- 111 N 3000 Hz	FREQUENCY COUNTER Frequenz-zähler	OUT L CH OUT R CH	TAPE A TAPE B	SFR 409	3000 Hz
PLAYBACK HIGH		MTT-111 N 3000 Hz		OUT L CH OUT R CH	TAPE A TAPE B	SFR 410	4800 Hz

3. Dolby level/Dolby-Pegel

PLAYBACK		MTT-150 DOLBY TAPE 400 Hz	V. T. V. M AC-Millivoltmeter	IC 403 Pin 6 Pin 11	TAPE A	SFR 404 SFR 403	548 mV
					TAPE B	SFR 402 SFR 401	

4. Oscillator coil frequency/Oszillatorfrequenz

RECORD		AC-513 IEC-II	FREQUENCY COUNTER Frequenzzähler	ERASE HEAD Löschkopf	L-411	125 kHz

5. Trap coil/HF-Sperre

RECORD		AC-513 IEC-II	V. T. V. M AC-Millivoltmeter	R 482	L-405	MINIMUM
				R 483	L-406	

6. Head bias level/Vormagnetisierung

RECORD		AC-513 IEC-II	V. T. V. M AC-Millivoltmeter	R/P HEAD	SFR 407/SFR 408	76 mV
		AC-212 IEC-I		R/P HEAD	SFR 411	55 mV

7. Level meter/Anzeige

RECORD	AUX IN 1 kHz/500 mV	AC-513 IEC-II	VR 402 to 548 mV at IC 403 Pin 6/Pin 11 Mit VR 402 an IC 403 548 mV einstellen.	SFR-4133 5 YELLOW LED LIGHT SFR-4133 so abgleichen, daß alle 5 gelben LED's leuchten.

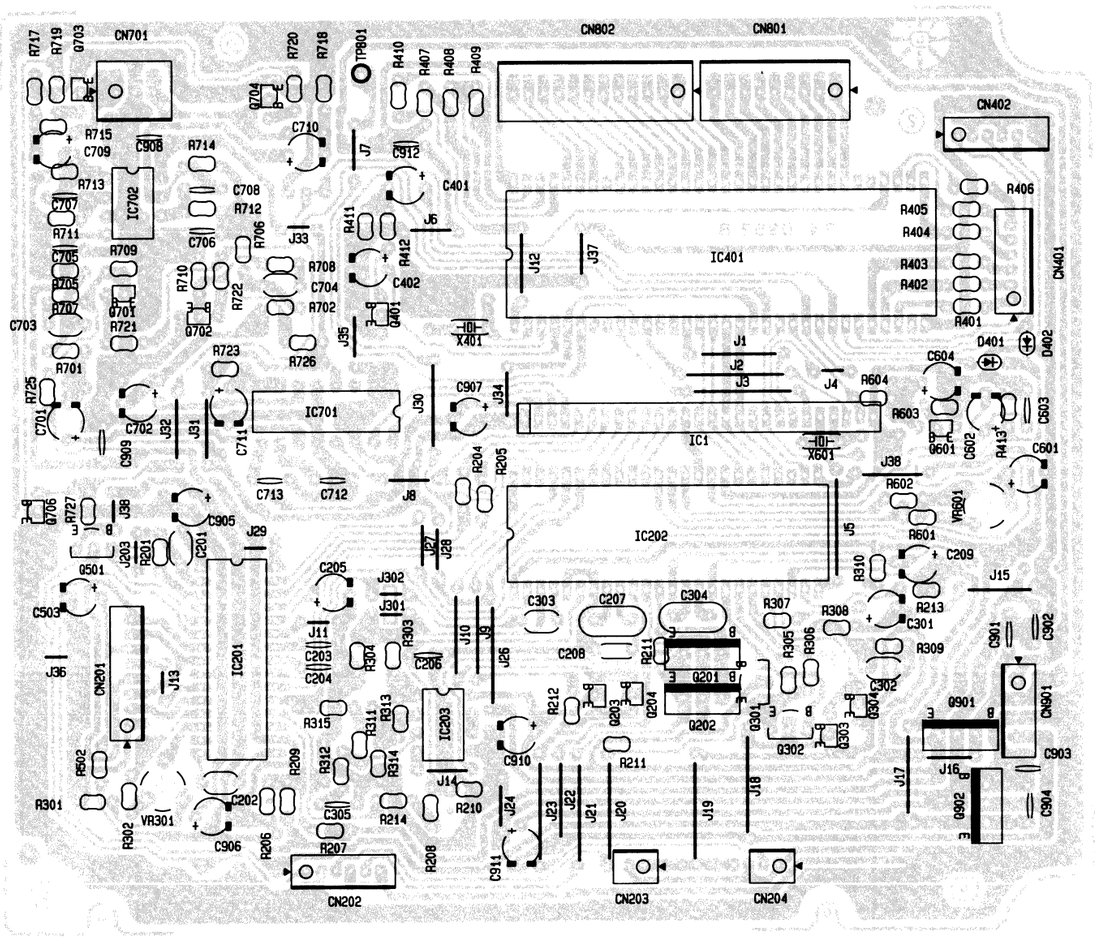
8. Record level/Aufnahmepegel

RECORD	AUX IN 1 kHz/500 mV	AC 513 IEC-II	V. T. V. M AC-Millivoltmeter	TP 1 TP 2	VR 402 to 548 mV at IC 403 Pin 4/Pin 20	200 mV
					SFR 405/SFR 406	

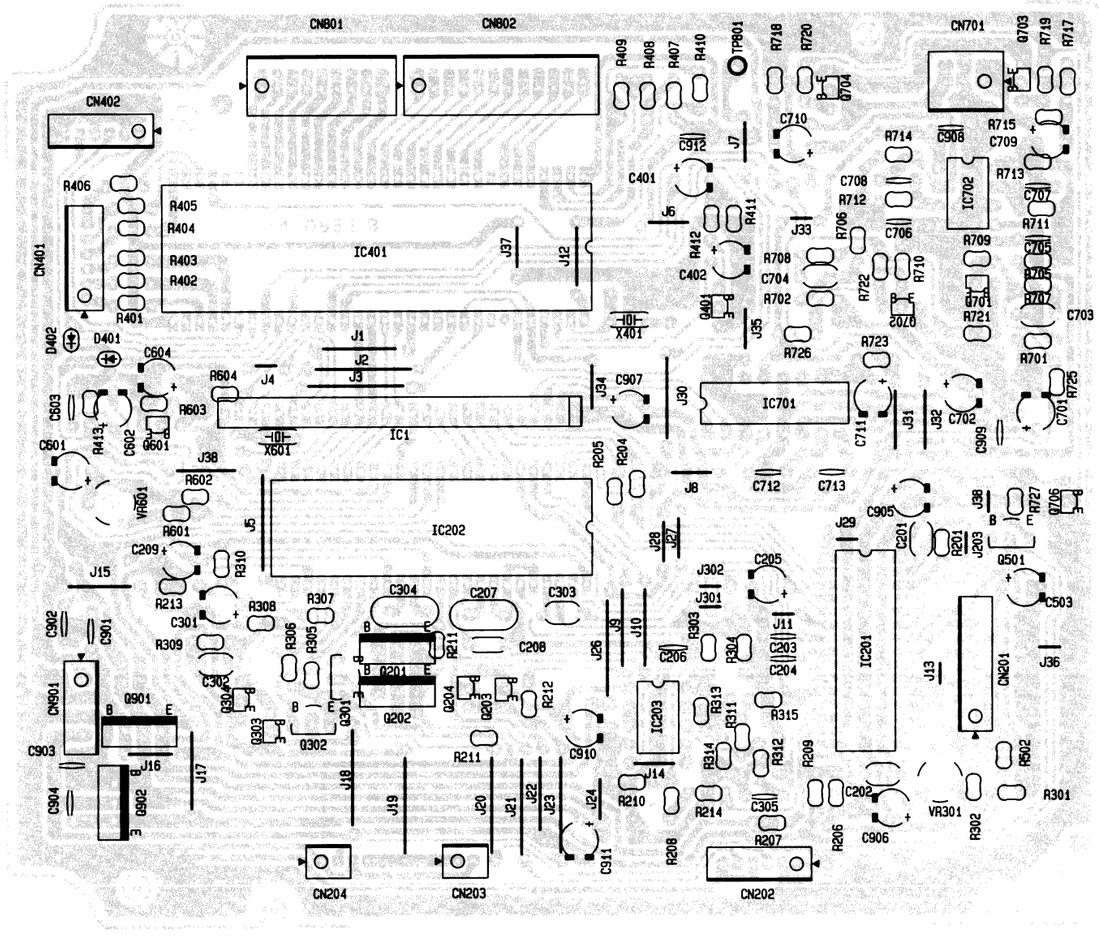
Löschspannung: Fe: ca. 140 Vss
Cr: ca. 190 Vss

Vormagnetisierung: Fe: ca. 70 Vss
Cr: ca. 90 Vss

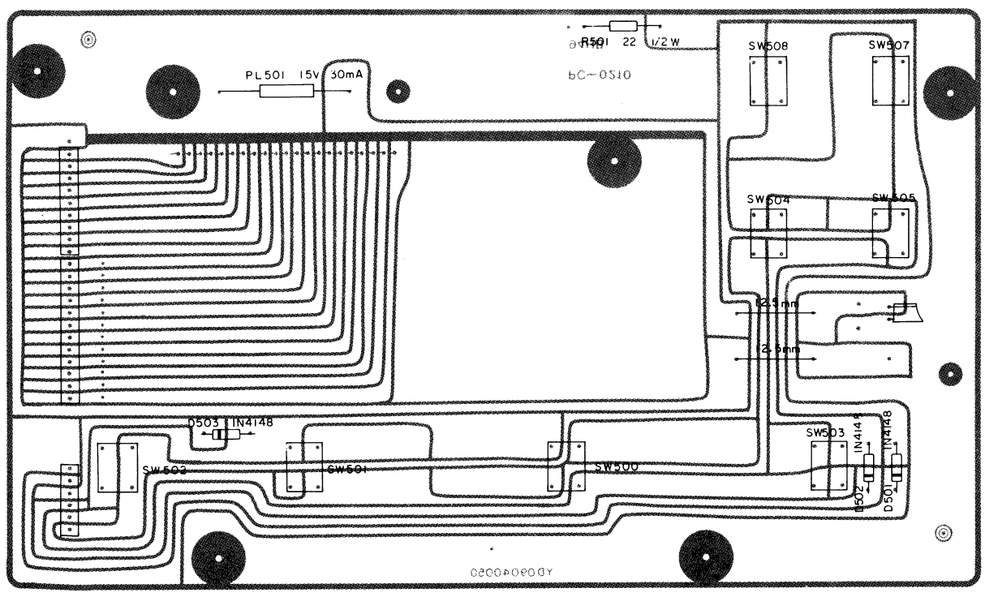
Bestückungsseite/Top view
CD-Platine
CD P.C.B.

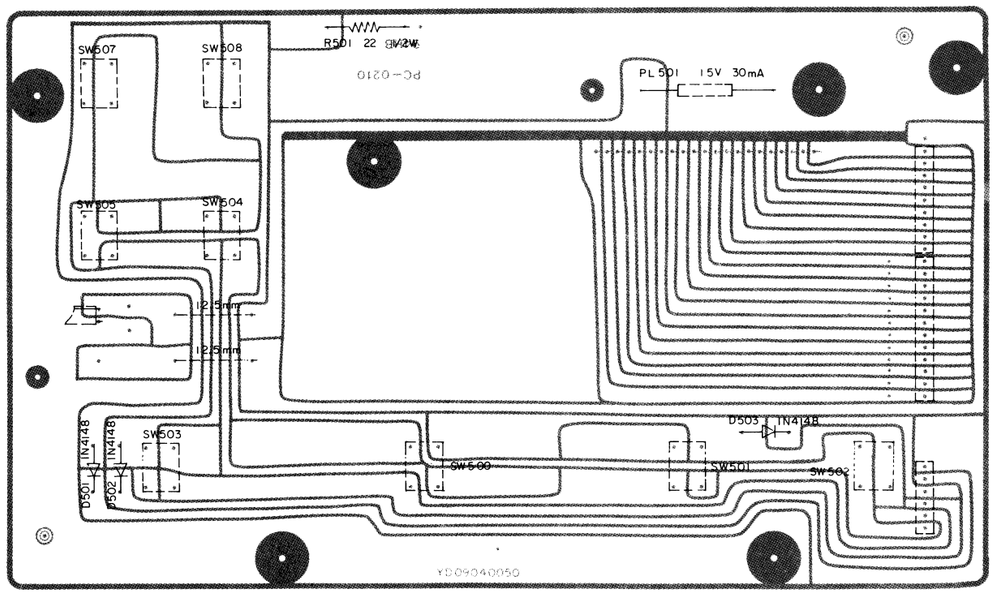


Leiterbahnseite/Bottom view

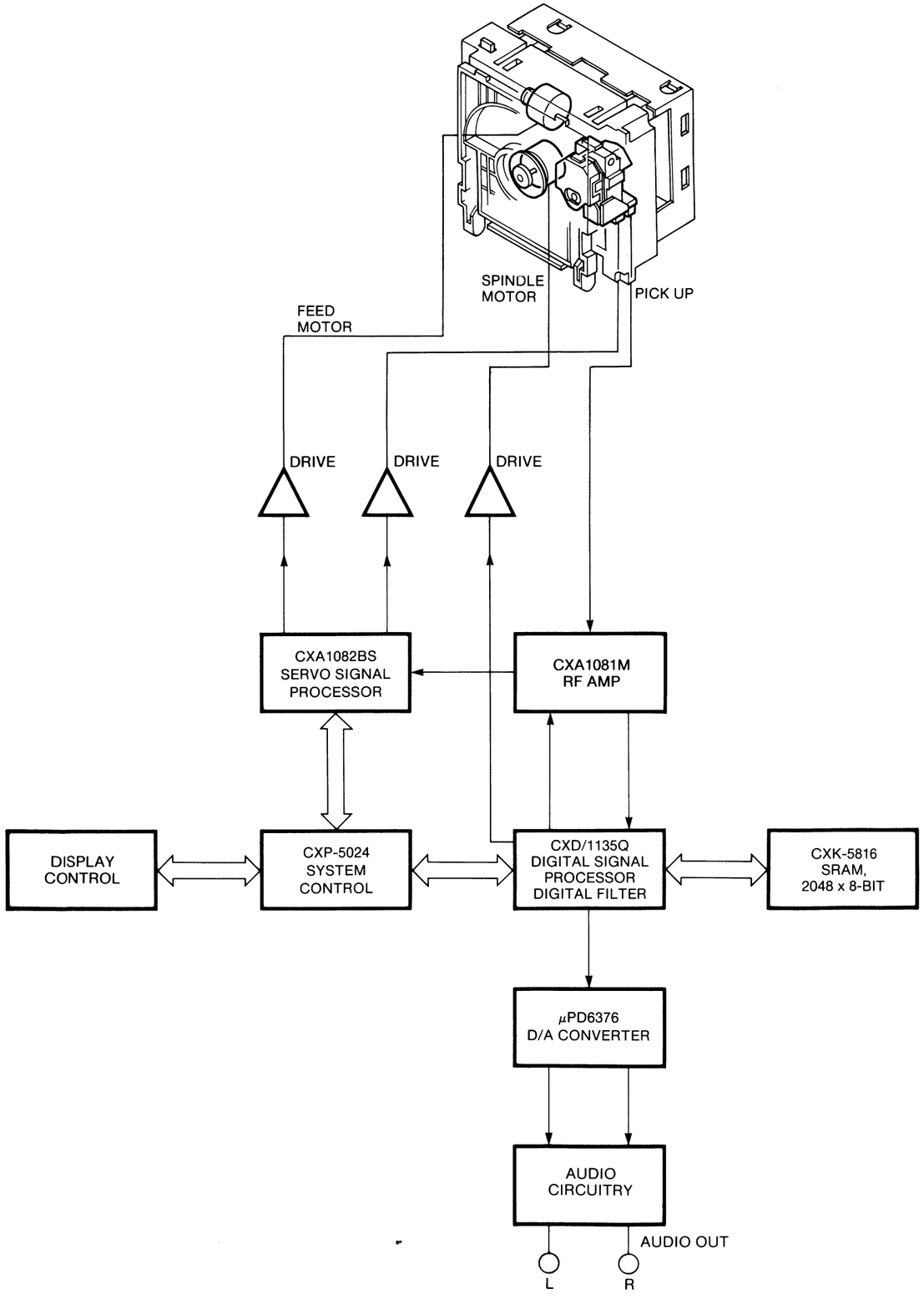


Funktionsplatine CD
CD function P.C.B.

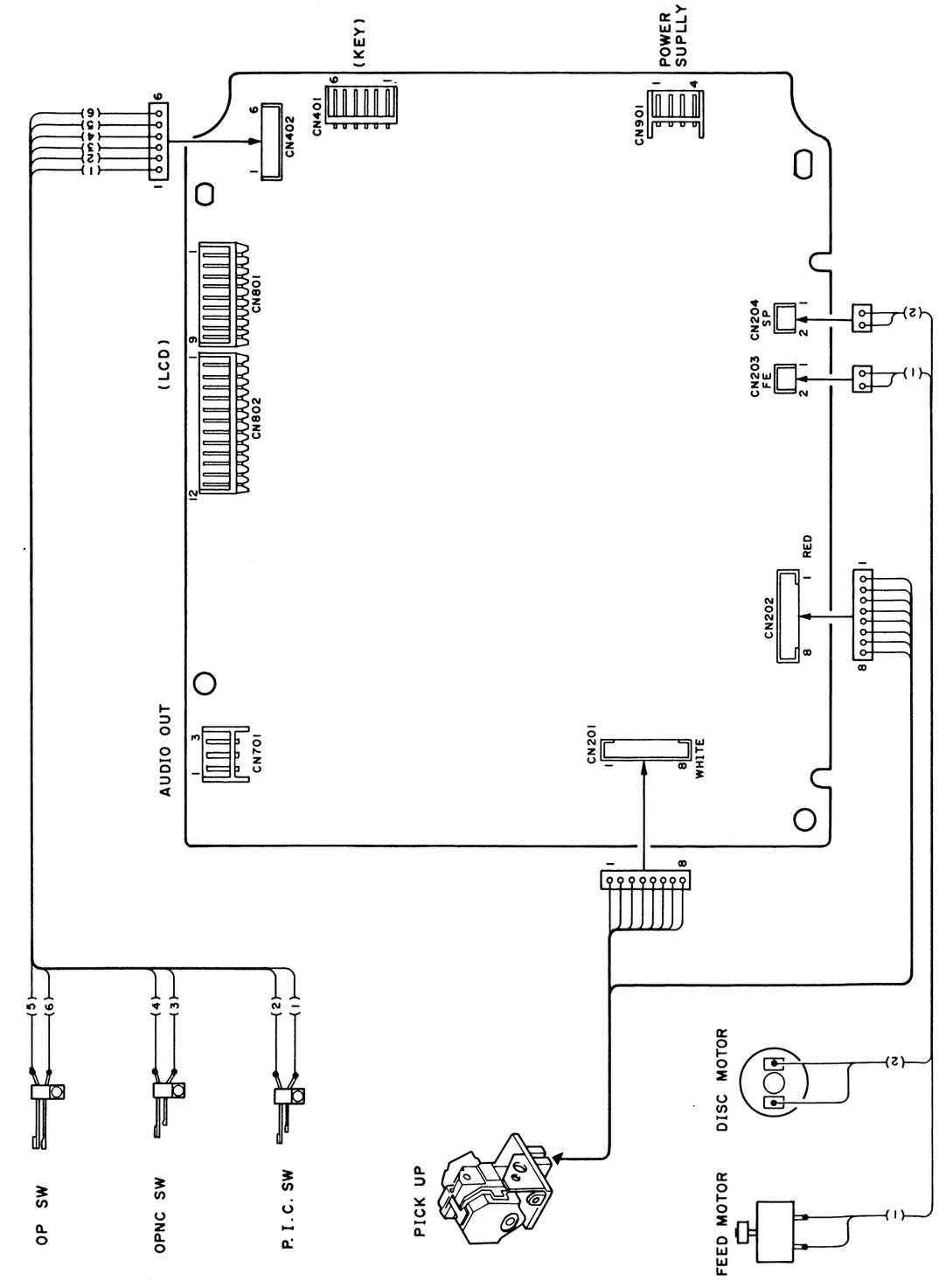




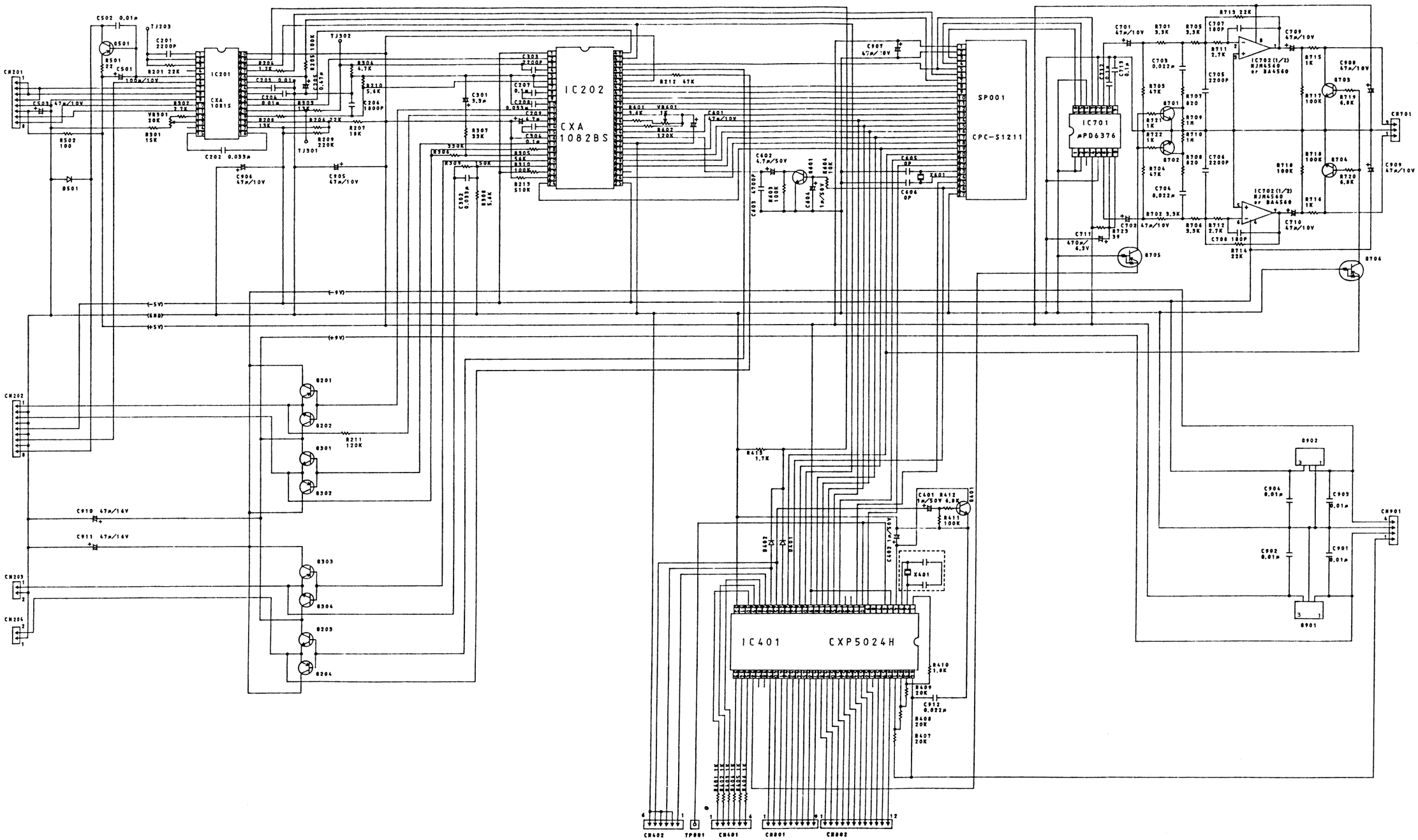
Blockschaltbild CD-Player
Block diagram CD player



Verdrahtungsplan CD-Player
Wiring diagram CD player



Schaltbild CD-Player
Circuit diagram CD player



Schaltbild IC-Zusatzplatine SP 001 CPC-S 1211 zu CD-Player

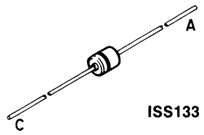
Circuit diagram Sub P.C.B. SP 001 CPC-S 1211 for CD player

1	+5V
2	GND
3	D14
4	D16
5	LRCK
6	EFM
7	ASY
8	FSW
9	MON
10	MDP
11	LOCK
12	VCO
13	PDI
14	CLK
15	XLT
16	DATA
17	XRST
18	CNIN
19	SENS
20	MUTG
21	SUBQ
22	SCOR
23	XTAO
24	XTAI
25	SQCK
26	GFS
27	GND

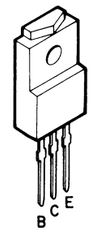
R 1	6.8K ~ 22K	10 K	Ω
R 2	82K ~ 120K	100 K	Ω
R 3	82K ~ 120K	100 K	Ω
R 4	82K ~ 120K	100 K	Ω
R 5	8.2K ~ 47 K	20 K	Ω
R 6	820K ~ 3.9M	1 M	Ω
R 7	6.8K ~ 22 K	11 K	Ω
R 8	0 ~ 3.9 K	1 K	Ω
R 9	0 ~ 3.9K	1 K	Ω
R10	0 ~ 3.9K	1 K	Ω
C 1	680P ~ 2200P	1000P	F
C 2	0.1μ ~ 0.82μ	0.47μ	F
C 3	2700P ~ 0.033μ	6800P	F
C 4	1000P ~ 0.1 μ	0.01μ	F
C 5	0.01μ ~ 0.47 μ	0.1 μ	F
C 6	10 P ~ 100 P	15 P	F
C 7	10 P ~ 100 P	15 P	F

IC- und Transistorblockschaltbilder für CD-Player

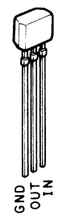
IC and transistor block diagrams for CD player



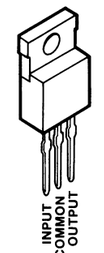
ISS133 D401, 402, 501



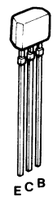
2SB1185 Q201
2SD1762 Q202



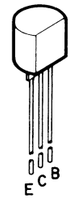
DTA143ES Q705, 706



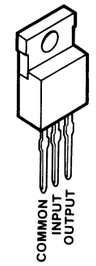
BA17805 Q901



2SA854 Q204, Q303
2SC1740 Q401, 601, 701, 702
Q703, 704
2SC1741 Q203, Q304

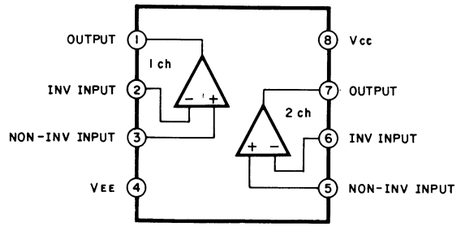


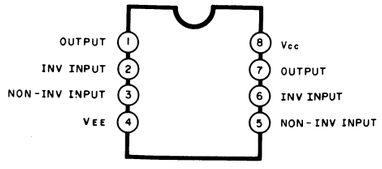
2SA1015Y Q501
2SA934 Q302
2SC2060 Q301



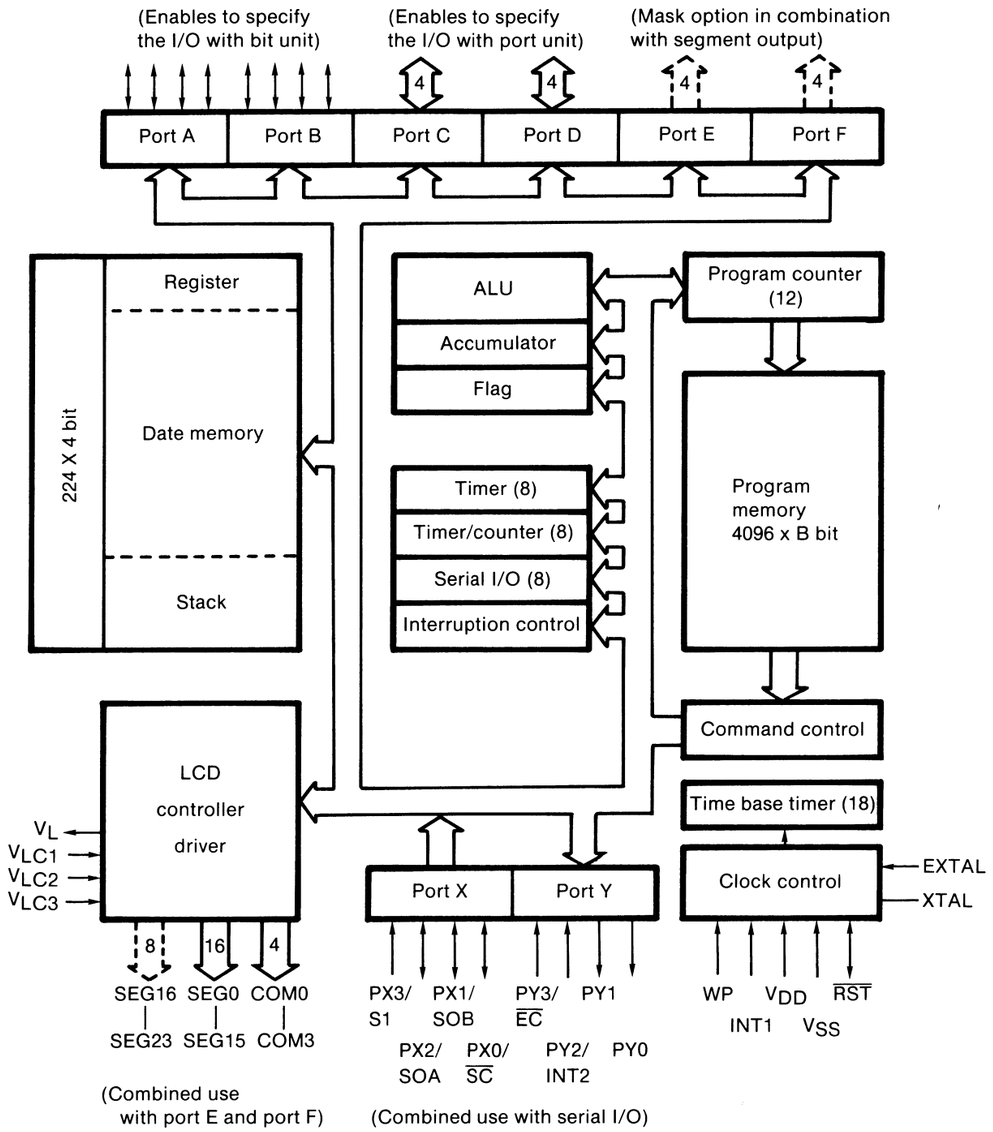
MC7905CT Q902

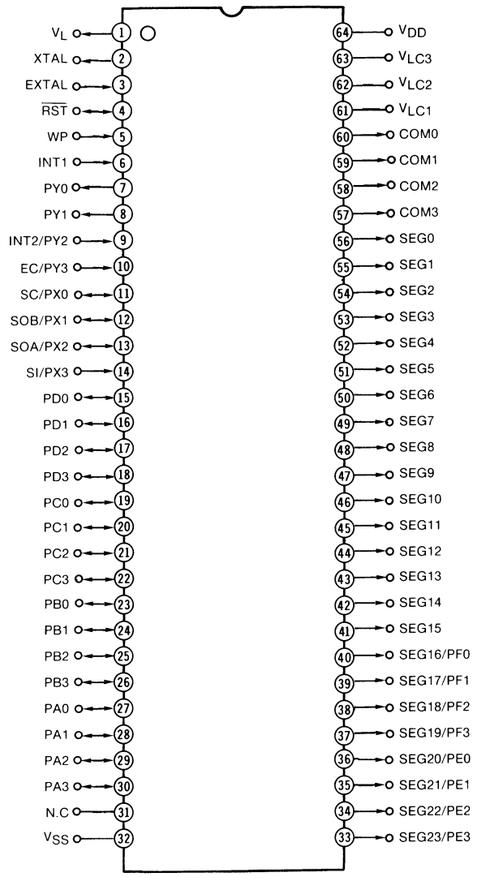
IC 702 BA 4560



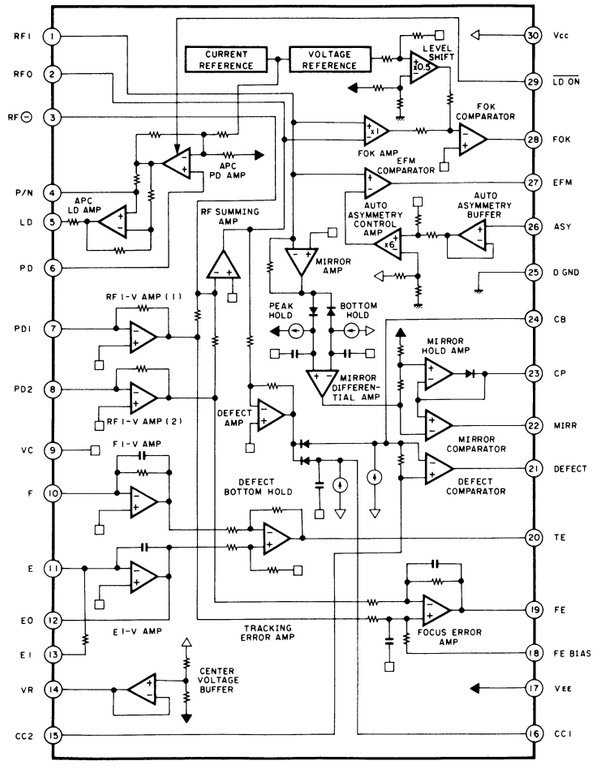


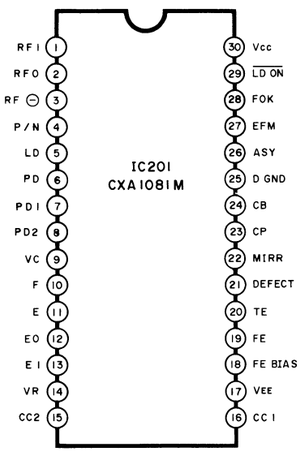
IC 401 CXP 5024 H



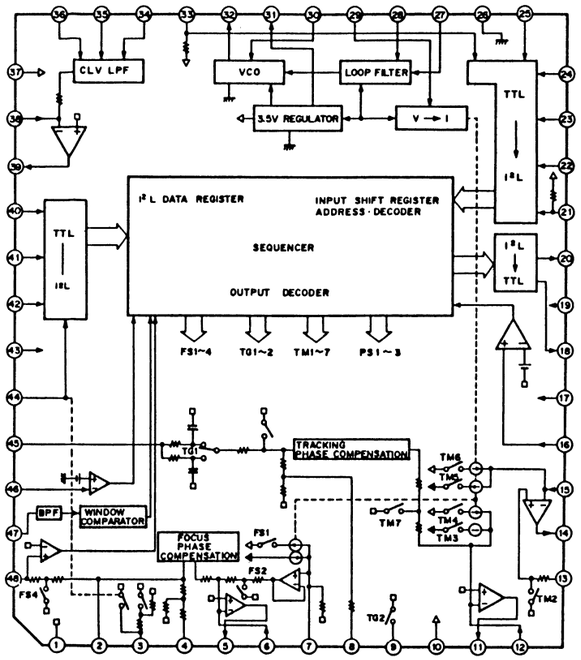


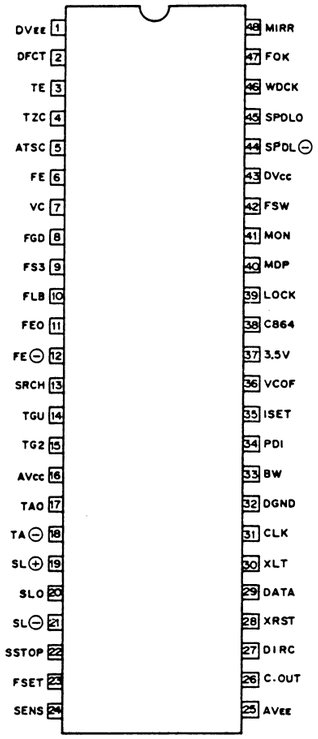
IC 201 CXA 1081 M



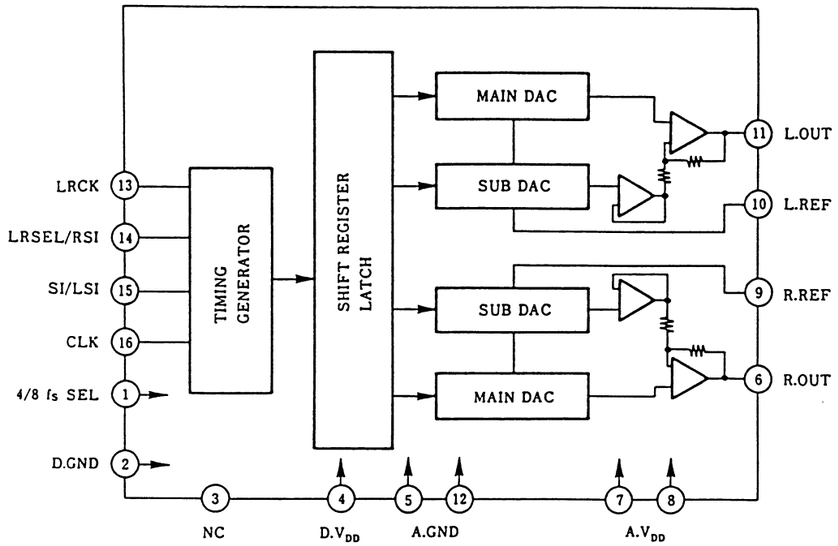


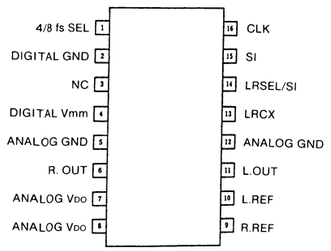
IC 202 CXA 1082





IC 701 μPD 6376





TR VOLTAGE

Pin No. DC	E	C	B
Q201	0.0	-9.0	-0.6
Q202	0.0	9.0	0.6
Q203	0.0	9.0	-0.6
Q204	0.0	-9.0	-0.6
Q301	0.0	9.0	0.5
Q302	0.0	-9.0	0.5
Q303	0.0	-9.0	0.6
Q304	0.0	9.0	0.6
Q401	0.0	5.2	0.0
Q601	0.0	0.0	0.0
Q701	0.0	0.0	-0.2
Q702	0.0	0.0	-0.2
Q703	0.0	0.0	0.0
Q704	0.0	0.0	0.0

Pin No. DC	IN	GND	OUT
Q705	0.0	-0.3	0.0
Q706	3.3	0.0	0.0
Q901	9.0	0.0	5.0

IC201

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DC	0.0	0.3	0.0	2.8	3.0	-5.0	0.0	0.0	0.0	0.0	0.0	-1.0	-0.7	0.0	-1.1
Pin No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DC	0.8	-5.0	-0.1	-0.1	-0.1	-4.2	0.0	-3.4	0.0	0.0	2.5	2.4	0.3	2.3	5.0

IC202

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DC	-5.0	-4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	0.5	0.0	0.0
Pin No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DC	5.0	0.6	0.0	0.0	0.6	0.0	-5.0	-4.0	5.0	-5.0	0.1	5.0	5.0	5.0	5.0
Pin No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
DC	5.0	0.0	2.9	2.9	2.3	2.3	3.5	2.2	0.0	0.0	0.0	0.0	5.0	0.0	-0.5
Pin No.	46	47	48												
DC	2.5	0.0	0.0												

IC401

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DC	0.0	2.2	2.2	5.3	5.0	0.2	5.0	5.0	0.0	0.2	5.0	0.0	0.0	0.0	5.0
Pin No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
DC	5.0	5.0	5.0	5.0	0.0	5.0	0.0	3.3	2.8	5.0	0.0	5.0	5.0	5.0	5.0
Pin No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
DC	0.0	0.0	5.0	5.0	5.0	2.9	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Pin No.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
DC	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Pin No.	61	62	63	64											
DC	3.4	1.8	0.2	5.0											

IC701

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DC	0.0	0.0	0.0	5.0	0.0	1.5	4.8	4.8	2.1	2.1	1.5	0.0	2.5	0.0	0.0
Pin No.	16														
DC	2.4														

IC702

Pin No.	1	2	3	4	5	6	7	8
DC	0.0	0.0	0.0	-5.0	0.0	0.0	0.0	5.0

SP001

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DC	5.0	0.0	2.4	0.0	2.5	2.5	2.5	0.0	0.0	0.0	0.0	2.2	2.9	5.0	0.0
Pin No.	16	17	18	19	20	21	22	23	24	25	26	27			
DC	5.0	5.0	0.1	0.1	3.3	0.0	0.0	2.4	2.4	5.0	0.0	0.0			

Abgleichanweisung CD-Spieler

Benötigte Meßgeräte: Frequenzzähler
Test-CD
Oszilloskop

VCO-Frequenzabgleich

Dieser Abgleich kann ohne CD-Platte durchgeführt werden.

1. Frequenzzähler an Testpunkt VCO und Masse anschließen.
2. Pin 7 der IC-Zusatzplatine mit Masse verbinden.
3. Gerät einschalten.
4. Mit Poti VR 601 Frequenz auf 4,3218 ±0,01 MHz abgleichen.
5. Kurzschlußbrücke an Pin 7 der IC-Zusatzplatine wieder entfernen.

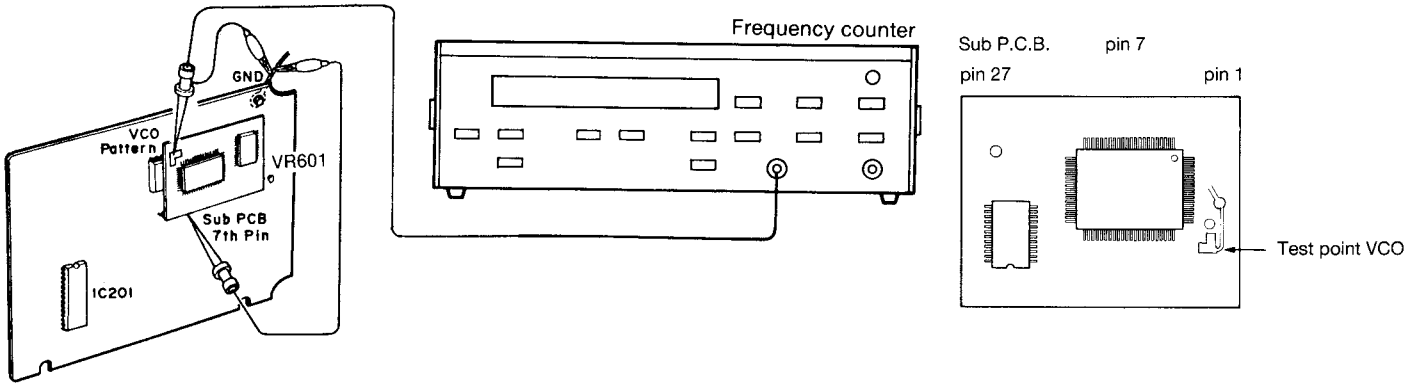
Alignment procedure CD player

Instruments required: Frequency counter
Test disc
Oscilloscope

VCO frequency adjustment

This VCO frequency adjustment does not need a CD disc.

1. Connect the frequency counter to test point (VCO) and to ground.
2. Connect the Sub P.C.B. 7th pin to GND wire.
3. Set the unit power on.
4. Adjust VR 601 to 4.3218 ±0.01 MHz.
5. Resolder (Pin 7 in Sub P.C.B. and GND).



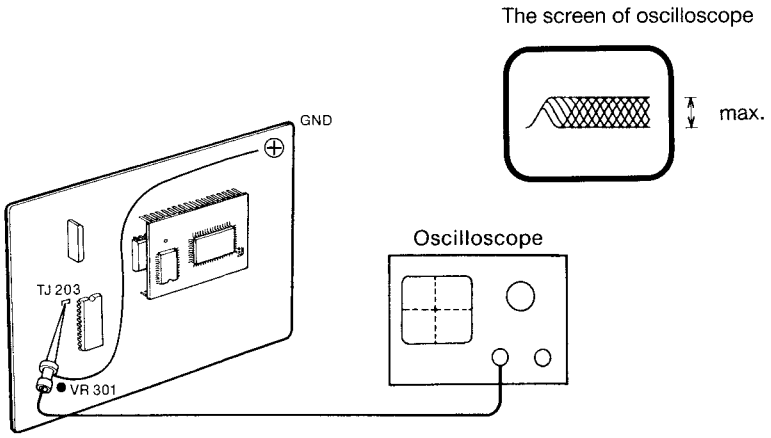
VCO ADJUSTMENT

EF-Balance-Abgleich

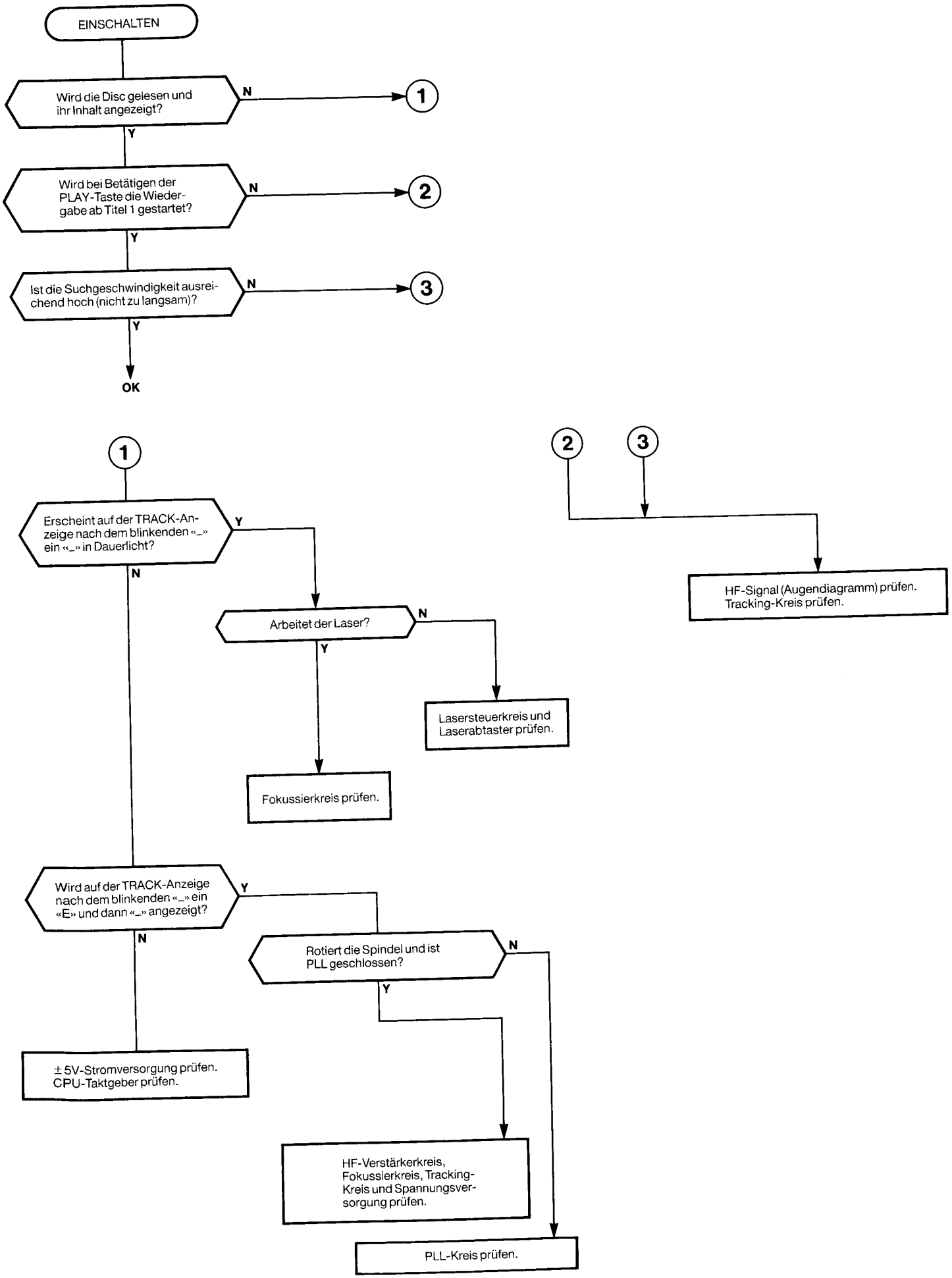
1. CD-Platte einlegen und »PLAY«-Taste drücken.
2. Oszilloskop an Testpunkt TJ 203 und Masse anschließen.
3. HF-Signal mit VR 301 auf Maximum abgleichen.

EF-Balance adjustment

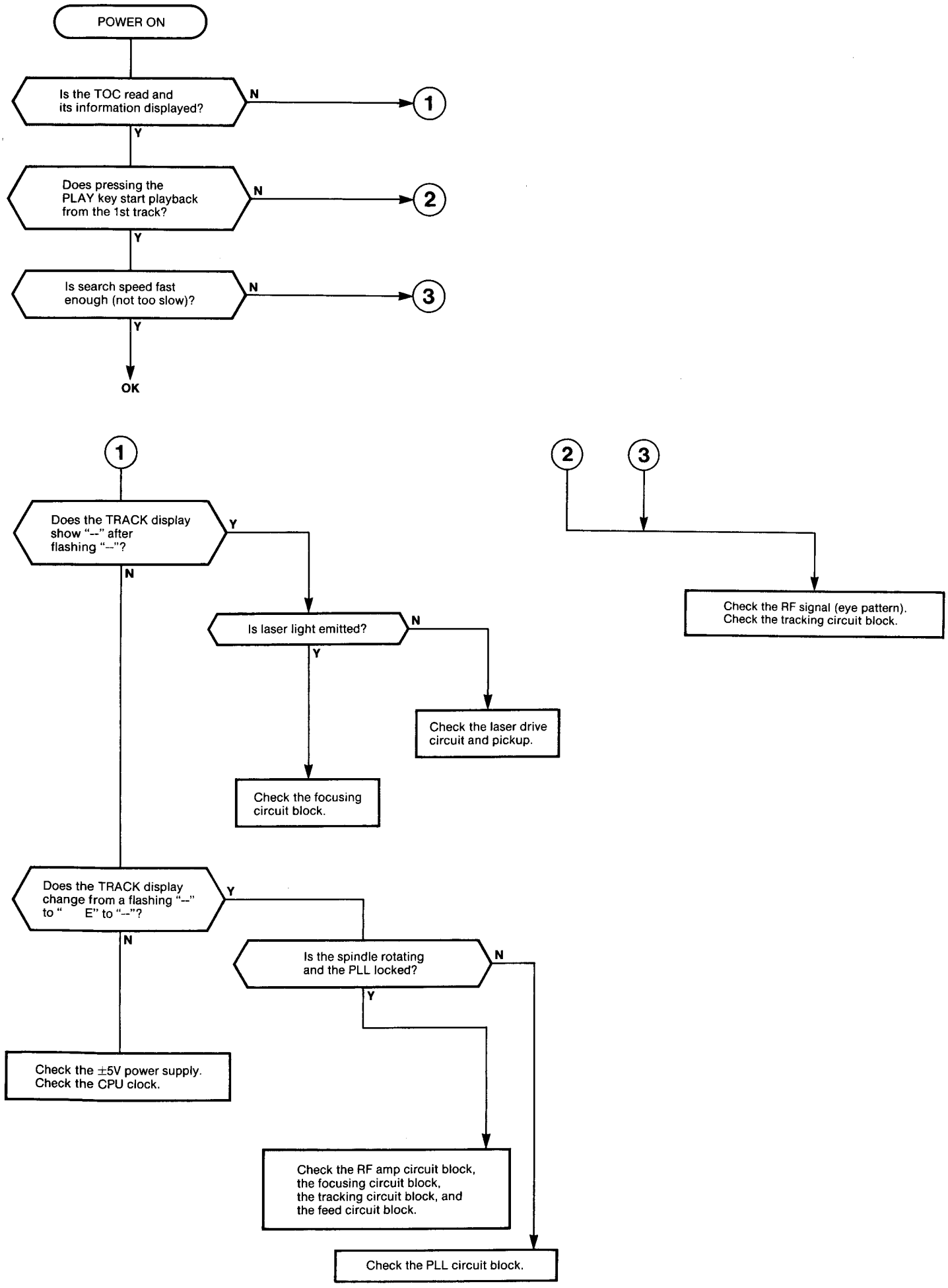
1. Load a disc and play back.
2. Connect an oscilloscope to the test points TJ 203 and ground.
3. Adjust VR 301 so that the HF-Signal becomes maximum.



Fehlersuchdiagramm CD-Player



Troubleshooting Flowchart CD player



Ersatzteilliste CD-Player
Spare parts list CD player

Mechanische Teile/mechanism

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
48 778 00	CD Mechanik kpl.	Mechanism assembly		H2
44 102 00	CD Plattenfach	Door	1	A7
44 103 00	Zahnbügel	¼ gear	2	A3
44 104 00	Feder Plattenfach	Door spring	5	A2
44 105 00	Zentrierscheibe	Disk cramper	8	A3
44 132 00	Mikroschalter	Leaf switch	9	A4
44 106 00	Eject-Hebel	Eject lever	14	A2
44 107 00	Eject-Knopf	Eject knob	17	A2
44 108 00	Mikroschalter	Leaf switch	18	A5
48 779 00	Mikroschalter LSA-1119 F	Leaf switch LSA-1119 F	20	A8
48 780 00	Zentrierscheibe unten	Locator	23	A5
48 781 00	Feder Antriebsteller	Locator spring	25	A1
46 762 00	Antriebsteller	Disk table	26	B0
44 113 00	Dämpferzahnrad	Damper gear	29	A2
48 782 00	Feder Dämpfer	Damper spring	31	A5
44 115 00	Motorpulley Laser	Driving pulley	37	A1
48 783 00	Riemen	Belt	38	A5
48 784 00	Motor Laser	Feed motor	39	C2
46 761 00	Motor Antrieb CD-Platte	Disk motor	41	C0
44 119 00	Lager Gewindestange links	Inner bearing	47	A2
44 120 00	Lager Gewindestange rechts	Outer bearing	48	A2
44 121 00	Pulley Gewindestange	Feed pulley	50	A2
44 122 00	Gewindestange	Feed screw	51	A8
48 785 00	Laserabtaster	Laser pickup	52	F6
44 124 00	Gleitstange	Guide shaft	53	A4
48 786 00	Gewindewinkel	Feed angle	57	A2
48 787 00	Umschalter Single-CD	Change lever	62	A8
48 789 00	Arm Umschalter	Arm	63	A6

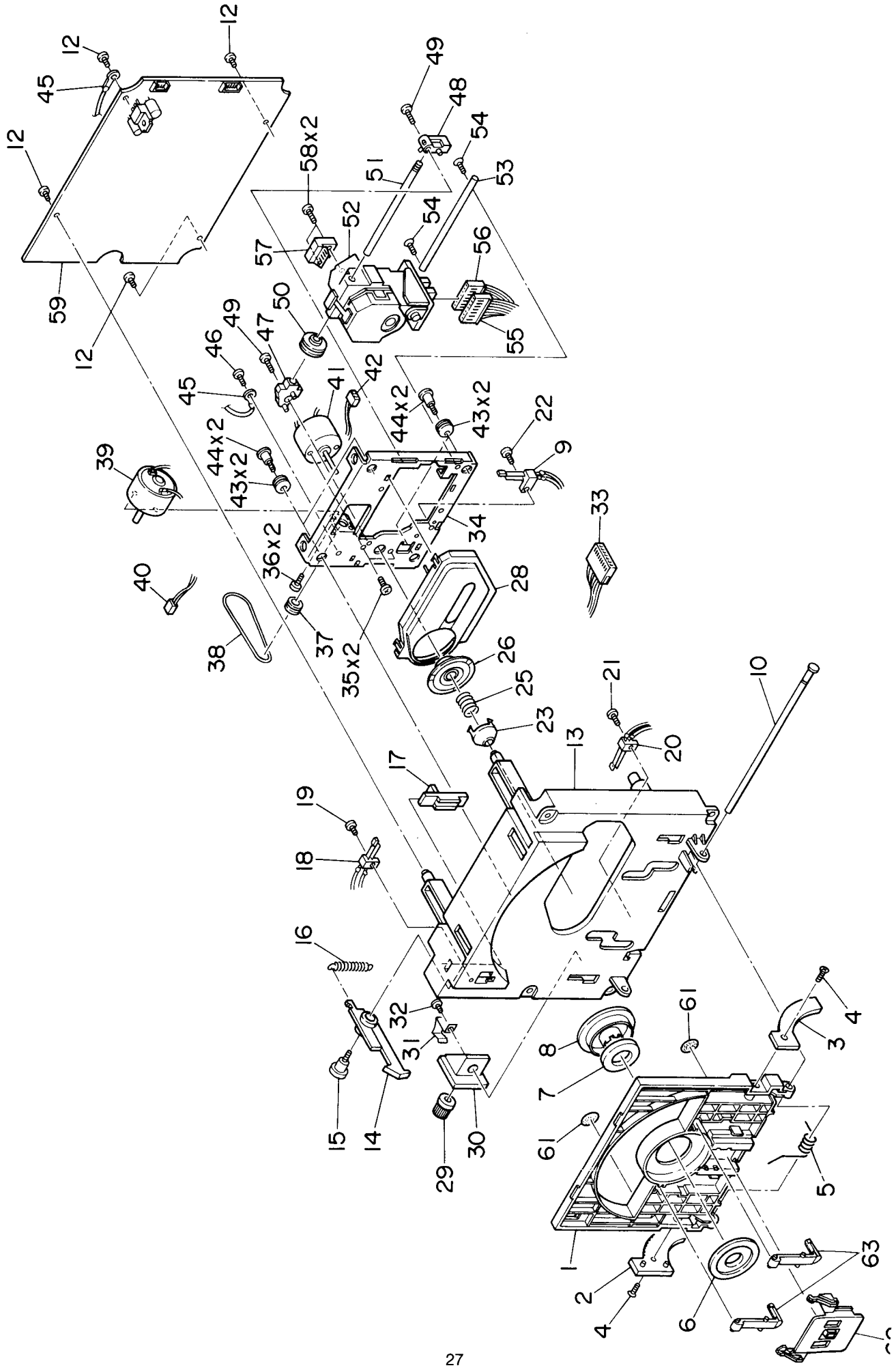
Elektrische Teile/electrical parts

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
48 790 00	Hauptplatine	PCB assembly	59	G4
46 747 00	IC CXA 1081 S	IC CXA 1081 S	IC 201	B4
48 791 00	IC CXA 1082 BS	IC CXA 1082 BS	IC 202	D0
48 792 00	IC CXP 5024 H-095 S	IC CXP 5024 H-095 S	IC 401	D5
48 793 00	IC UPD 6376 CX	IC UPD 6376 CX	IC 701	C6
40 765 00	IC BA 4560	IC BA 4560	IC 702	A6
40 766 00	Transistor 2 SB 1185 Y2E	Transistor 2 SB 1185 Y2E	Q 201	A8
40 767 00	Transistor 2 SD 1762 Y2E	Transistor 2 SD 1762 Y2E	Q 202	A7
29 590 00	Transistor 2 SC 1741 STPQ	Transistor 2 SC 1741 STPQ	Q 203, 304	A4
29 583 00	Transistor 2 SA 854 STPQ	Transistor 2 SA 854 STPQ	Q 204 303	A5
29 582 00	Transistor 2 SC 2060 TPQ	Transistor 2 SC 2060 TPQ	Q 301	A6
24 796 00	Transistor 2 SA 934 TPQ	Transistor 2 SA 934 TPQ	Q 302	A6
34 692 00	Transistor 2 SC 1740 SWTPQ	Transistor 2 SC 1740 SWTPQ	div.	A2
12 959 00	Transistor 2 SA 1015-Y	Transistor 2 SA 1015-Y	Q 501	A6
48 746 00	Transistor DTA 143 ESWTP	Transistor DTA 143 ESWTP	Q 705, 706	A3
48 747 00	Transistor BA 17805	Transistor BA 17805	Q 901	B1
48 794 00	Transistor MC 7905 CT	Transistor MC 7905 CT	Q 902	B2
29 622 00	Trimmpoti	Trimmer resistor	VR 301	A3
29 623 00	Trimmpoti	Trimmer resistor	VR 601	A3
48 795 00	Diode	Diode	div.	A2
46 839 00	Keramikfilter	Ceralock	X 401	A7
48 796 00	Keramikfilter	Ceralock	X 601	B2
48 797 00	CPC-S1211	CPC-S1211	SP 001	F6

Explosionsdarstellung CD-Mechanik

Exploded view CD mechanism

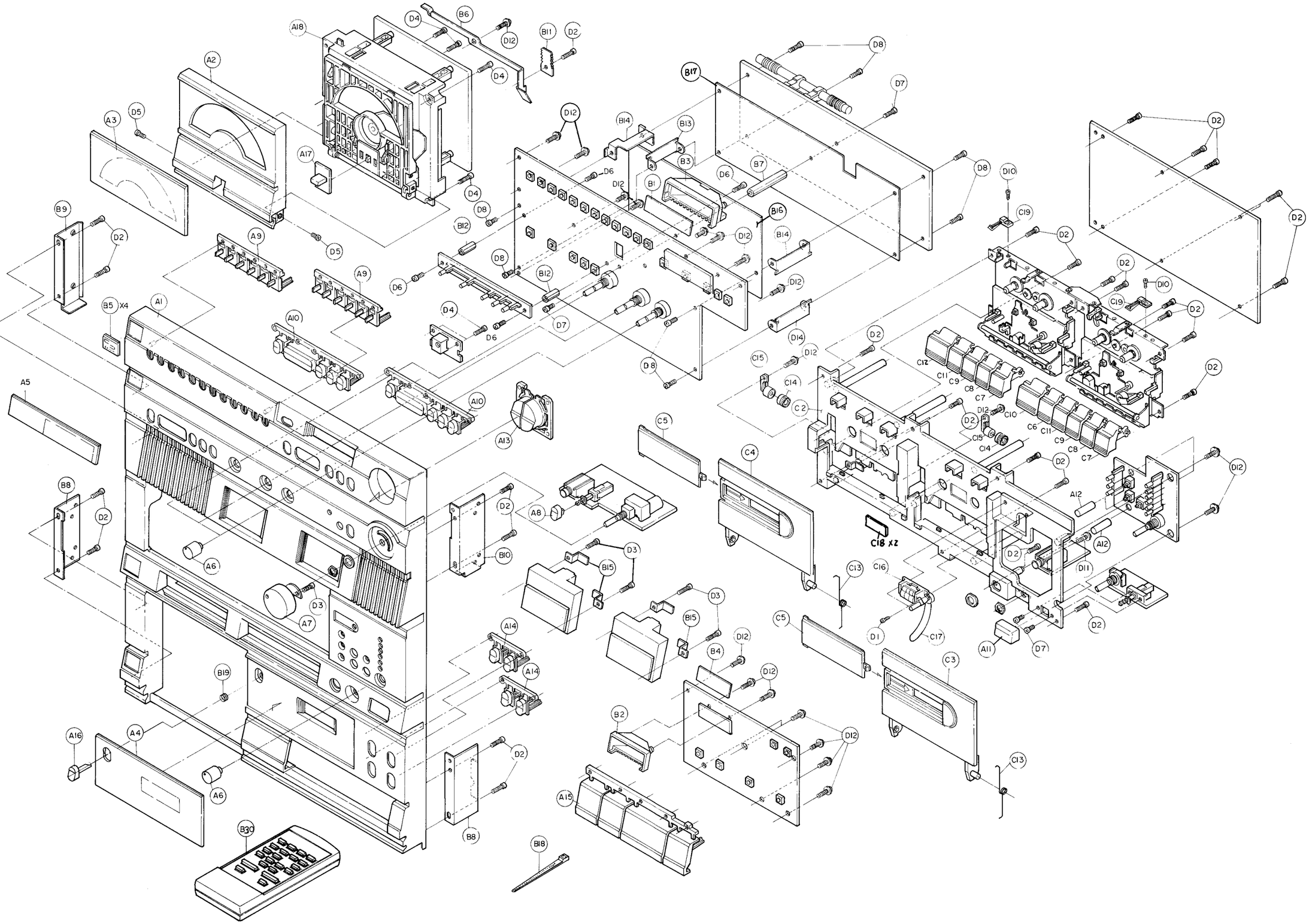
Explo-Index: CD



Ersatzteilliste Gehäuseteile
Spare parts list housing parts

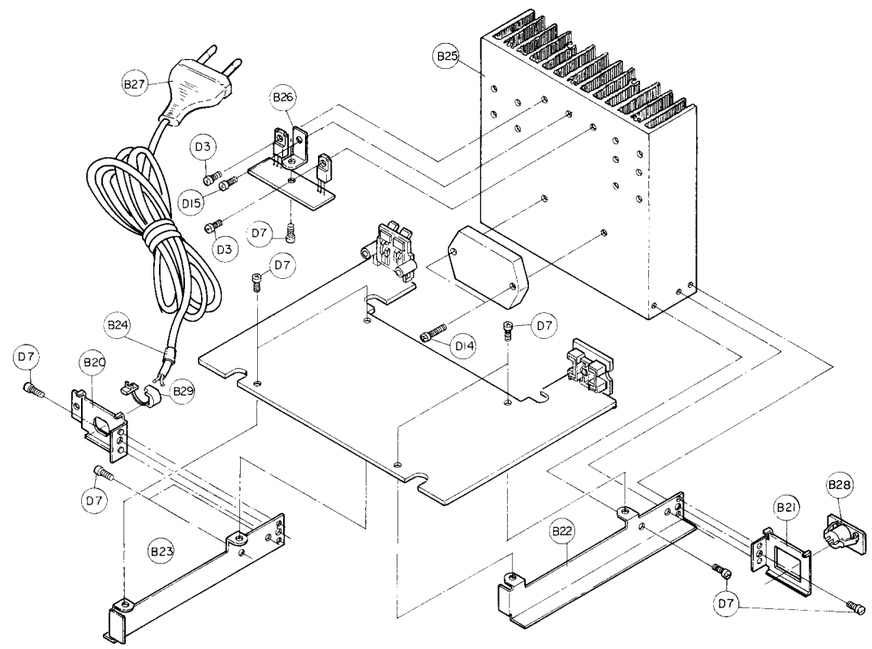
Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
48 798 00	Frontteil CV 90–4	Front panel CV 90–4	A1	C9
48 799 00	Blende CD-Fach	CD door	A2	A9
48 800 00	CD-Fach-Fenster	CD window	A3	A9
48 801 00	Blende CD Display	CD display window	A4	A9
48 802 00	Blende Tuner Display	Tuner display window	A5	A8
48 803 00	Knopf dreh 14,5 mm	Function knob	A6	A1
48 804 00	Knopf dreh Lautstärke	Main volume knob	A7	A2
48 805 00	Knopf Loudness	Loudness button	A8	A1
48 806 00	Tastensatz Senderspeicher 6fach	Tuning preset button assembly	A9	A2
48 807 00	Tastensatz 5fach	Function button assembly	A10	A2
48 808 00	Knopf Netzschalter	Power button	A11	A2
48 809 00	Knopf Hi-Sp, Dolby	Hi-Sp button	A12	A1
48 810 00	Knopf Tuning kpl.	Tuning knob assembly	A13	A3
48 811 00	Tastensatz CD 2fach	CD preset button assembly	A14	A2
48 812 00	Funktionstasten CD	CD button assembly	A15	A6
48 813 00	Knopf Eject CD	CD eject button	A16	A1
48 814 00	Knopf CD Umschaltung	CD change knob	A17	A2
18 197 00	Feder Eject-Knopf CD	CD eject spring	B19	A0
48 815 00	Cassettenfach (A)	Cassette case (A)	C3	A9
48 816 00	Cassettenfach (B)	Cassette case (B)	C4	B0
48 817 00	Cassettenfachfenster	Cassette window	C5	A6
48 818 00	Klaviertaste Play A (schmal)	Cassette key Play A	C6	A2
48 819 00	Klaviertaste Pause	Cassette key Pause	C7	A2
48 820 00	Klaviertaste Stop/Eject	Cassette key Stop/Eject	C8	A2
48 821 00	Klaviertaste Fast Forward	Cassette key FF	C9	A2
48 822 00	Klaviertaste Rec.	Cassette key Rec.	C10	A2
48 823 00	Klaviertaste Rewind	Cassette key Rew.	C11	A2
48 824 00	Klaviertaste Play B (breit)	Cassette key Play B	C12	A2
48 825 00	Feder Cassettenfach	Cassette open spring	C13	A1
40 790 00	Dämpfrad	Damper gear	C14	A2
40 791 00	Dämpfrad-Halter	Damper holder	C15	A2
48 826 00	Zählwerk	Tape counter	C16	B3
48 827 00	Riemen Zählwerk	Counter belt	C17	A2
48 969 00	Fernbedienungsgeber	Remote control	B30	D3
48 967 00	Frontteil CV 90–5	Front panel CV 90–5	A1	C9

Explosionsdarstellung Gehäuse
Exploded view housing
Explo Index: A–D

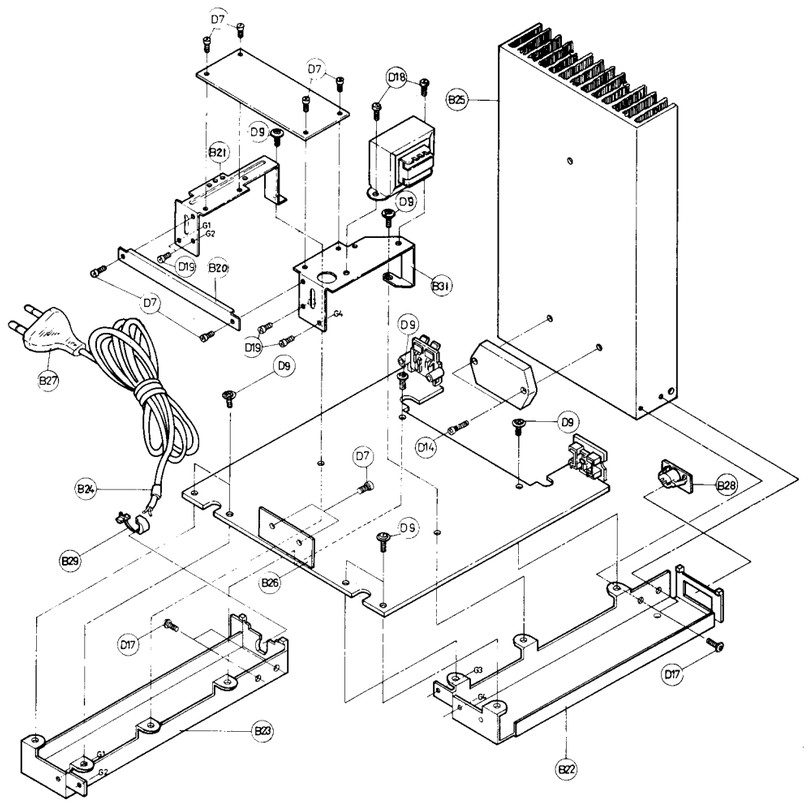


Explosionsdarstellung Netzteil/Endstufe
Exploded view power supply/output amplifier
Explo Index: B–D

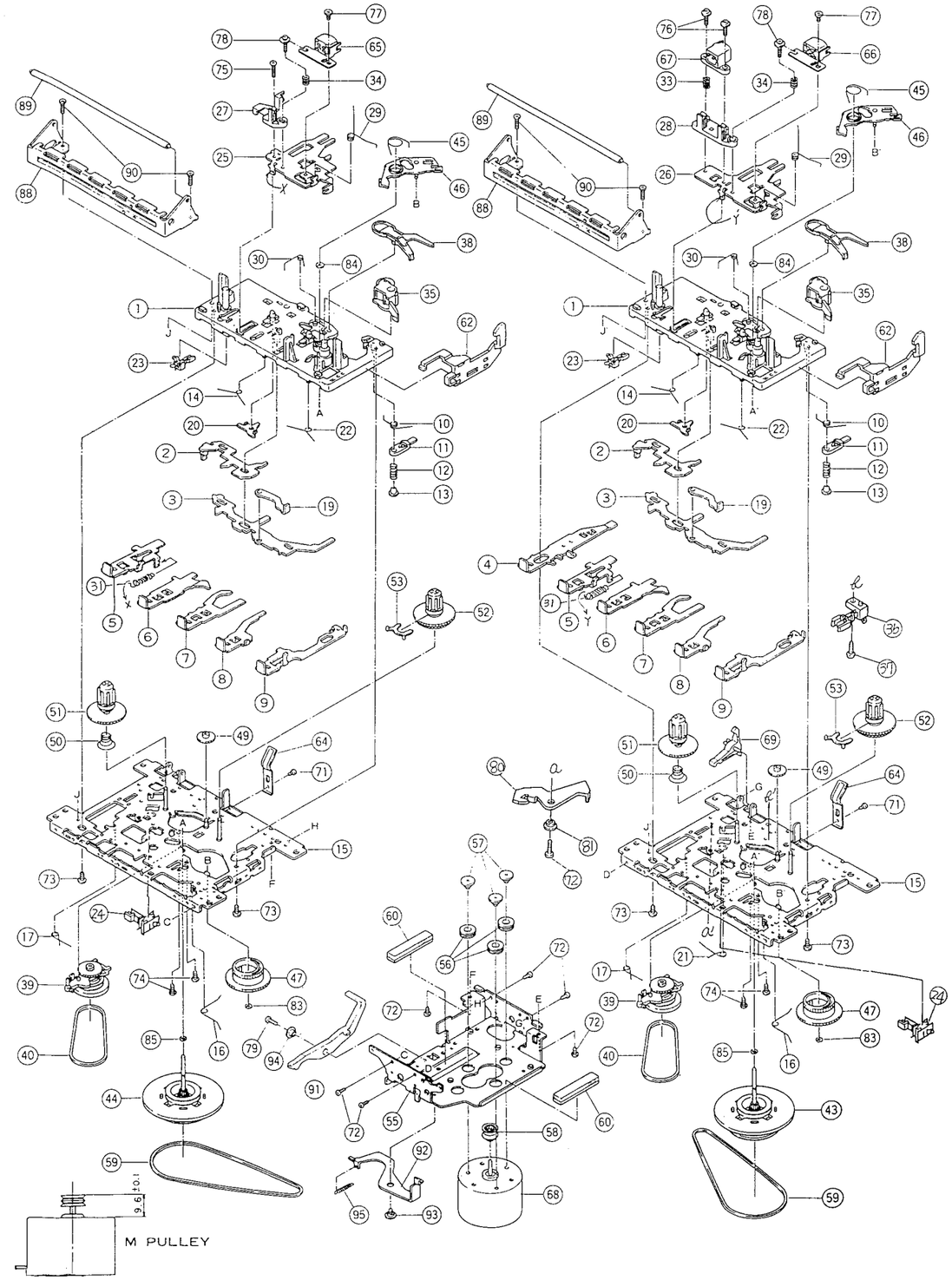
CV 90–4



CV 90–5



Explosionsdarstellung Cassettenmechanik
Exploded view cassette mechanism
Explo Index: CM



Ersatzteilliste Cassettenmechanik
Spare parts list cassette mechanism

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe/ Price key
48 828 00	Mechanik kpl.	Mechanism assembly		E7
44 128 00	Feder Pauserasthebel	Spring pause lever	10	A0
46 417 00	Pauserasthebel	Pause lever	11	A0
44 130 00	Druckfeder Pausenrasthebel	Pause lever spring	12	A0
44 131 00	Sicherungsstöpsel Pause	Pause stopper	13	A0
32 428 00	Feder Tastenhebel (Vor-Rücklauf)	Button lever spring	14	A3
46 864 00	Feder Aufnahmetaste	Rec. button lever spring	21	A0
32 423 00	Feder Tastenhebel (Stopp-Pause)	Button lever spring	22	A3
44 132 00	Mikroschalter	Leaf switch	23	A4
13 882 00	Mikroschalter	Leaf switch	24	A9
45 760 00	Feder Kopfträgerplatte	Panel head spring	29	A1
44 134 00	Bandandruckrolle kpl.	Pinch roller arm assembly	35	A6
44 135 00	Tasthebel Endabschaltung	Sensing lever	38	A1
44 137 00	Rutschkupplung kpl.	RF clutch assembly	39	A7
44 138 00	Riemen Rutschkupplung	RF belt	40	A4
46 865 00	Schwungmasse (Wiedergabe)	Flywheel assembly	43	B7
46 866 00	Schwungmasse (Aufnahme)	Flywheel assembly	44	B7
44 136 00	Kurvenzahnrad	Cam gear	47	A2
44 140 00	Zahnrad Vorlauf	FF gear	49	A1
44 141 00	Wickelteller links	Supply reel assembly	51	A3
48 829 00	Wickelteller rechts	Takeup reel assembly	52	A7
44 778 00	Pulley-Motor	Motor pulley	58	A6
48 830 00	Antriebsriemen	Main belt	59	A3
46 418 00	Gleithebel Eject	Eject slide lever	62	A3
48 831 00	Wiedergabekopf	Playback head	65	B9
48 832 00	A/W-Kopf	Rec./Playback head	66	B9
26 887 00	Löschkopf	Erase head	67	B7
46 177 00	Motor Antrieb	Motor	68	C6
32 451 00	Aufnahmesperrhebel	Record safety lever	69	A5

Bitte bei Ersatzteilbestellung die genaue Bezeichnung und **Ident-Nr. (siehe Typenschild)** des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and **ident no. of unit (see silver rating label on the backside of unit)** as well as part no. and position no. of required spare parts.

Benutzen Sie:

Telex: 531516

oder

*317298 #

oder

Telefax: 08245/51326

Technische Änderungen vorbehalten.
Technical modifications reserved.